Business Conditions Sound and Prosperous

IT is not often that the general industrial conditions for the year are so clarified in the first six months as we find them this year.

We made a prediction through this column at the beginning of the year that 1926 would be as prosperous a year for manufacturers and distributors of commodities in the United States as 1925 was. And now with the records of the first six months' business coming in, we have no hesitancy in saying that the next six months will equal the final six months of 1925.

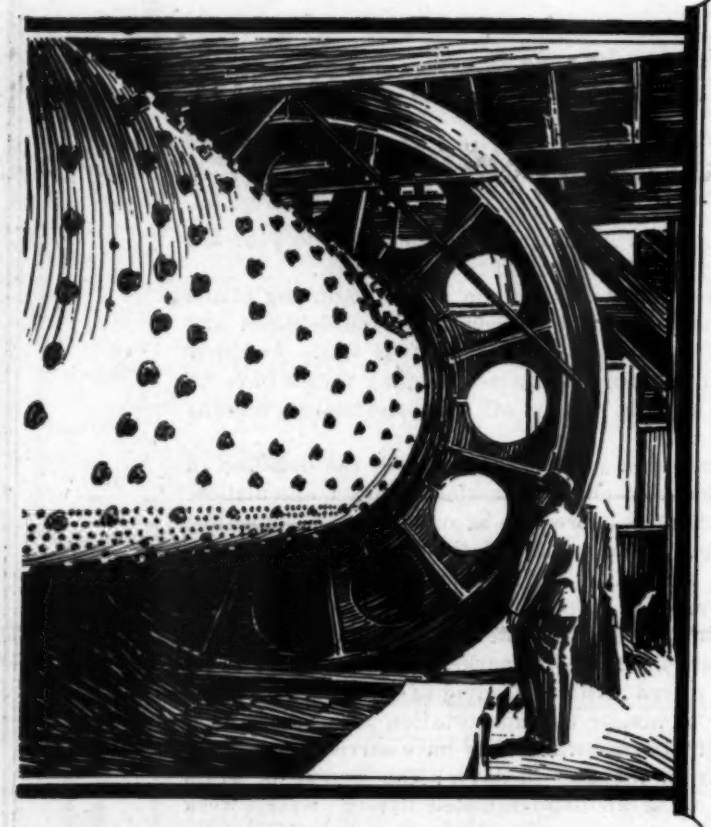
We had an industrial slump this year, beginning with the deflation in the Florida real estate speculation and in the stock market speculation. This paralleled a similar industrial depression at or about the same time in 1925. However, the recovery from the deflation this year was much quicker than last year. By the middle of May, this year, the stock markets began to recover, due entirely to the fact that the financial returns from corporate industries in the United States were consistently better than anticipated by the bears in the stock market.

We are also witnessing a record-breaking loading of commodities by the railroads, and it is a matter of wonder to transportation authorities themselves that the reserves of empty cars which they have carried for months has practically melted away in the last 40 days. The loading of grain and merchandise is going on at an unprecedented figure. Every week shows heavily increased loadings by the railroads as compared with a year ago, and the checks drawn in payment of this merchandise and cleared through the banks also corroborate the prosperous industrial situation. This month's report of the reserve banks and the other agencies shows that, with few exceptions, wholesale and retail trade is expanding normally and exceeding considerably that of a year ago. It is now beginning to appear that the forecasters of trade reaction were mistaken in the light of present evidences, and trade conditions are making up for the curtailment of activity which occurred during the spring, due to financial doubt and unseasonable spring weather.

The steel business is running at an unprecedented rate for the midyear. With the opening of July, the customary midsummer decrease in production has been the smallest in the past six years. There are no accumulations of stocks in the hands of wholesalers, retailers, and consumer reservoirs. In short, we are today facing the soundest, healthiest, most prosperous and best stabilized period in industry and commerce in the United States. There is no parallel that we can find for the present prosperous condition and outlook.

THIS IS THE TIME TO BUY GOODS!

Belt-testing Drives of Industry



Goodrich

Mechanical Rubber Goods

PERFORMANCE REPORT
No. 2100-A

[*From one of the largest cement plants in the world*]

"The original 24" 9-ply Goodrich "1788" belt applied over two years ago on No. 12 tube mill is still in service and the cost of maintenance has been nothing. They have never taken the belt up since it was put on the pulleys. They now have 16 of these 24" 9-ply Goodrich "1788" belts on tube mills, all of them operating satisfactorily.

"Other belts of various constructions applied to these drives have stretched the limit of the motor take-up, 9", within a few months.

"They are applying 18" 7-ply endless "1788" belts to their 14 Komminuter drives and 20" 7-ply to 4 coal pulverizer tube mills."

The Tube Mill—

ONLY a belt with extreme stamina and non-stretching quality can stand the terrific strain in turning over a large tube mill with its heavy charge of steel balls. The task is all the harder because of dust and often excessive moisture.

Goodrich has produced such a belt. Its performance on severe drives is so outstanding, so far superior to other belts as to cause wide comment wherever it has been used.

"1788" is of compact, extra strong construction to resist elongation on heavily loaded drives. Our warmest claims for it have been amply proven—the records exist and we shall be glad indeed to assist you in further investigation of this remarkable value.

THE B. F. GOODRICH RUBBER COMPANY, Established 1870, *Akron, Ohio*

Goodrich *TRANSMISSION* BELTS

"BEST IN THE LONG RUN"

Observations of a Traveler

Chemical Developments in the Paper Industry

DR. HUGH KELSEA MOORE, head of the research department of the Brown Company, Berlin, N. H., is president of the American Institute of Chemical Engineers, which held its summer meeting there during the last week of June. At that time it was our privilege to visit the several mills and chemical plants of the company in connection with a three-day symposium on chemical corrosion as distinguished from atmospheric corrosion, at which numerous papers were presented and discussed, one of some importance to the paper industry being on the formation of scale in boilers and the remedies therefor, which included either the use of chemicals like caustic soda for treatment of the water, or corrosion-resistant metals in the boiler tubes.

As manufacturers of strong bleached sulphite pulp as well as kraft and bond papers and, within a recent period, of alpha cellulose, the Brown Company has gained a reputation of a distinctive character. Few of those connected with the industry are aware, however, of the extent to which this company has specialized in the manufacture of by-product chemicals and paper specialties like insulating tubes, paper water pipes and paper cores.

Taking a retrospective glance at developments, the Observer is aware of a time years ago when the Brown family worked a saw mill at Berlin, a pulp mill operated by Mr. Burgess being only a short distance away. In course of time the Brown brothers started a paper mill, and not many years elapsed before the Brown and Burgess plants were consolidated to form the Berlin Mills Company.

The saw mill remains as a busy centre of lumbering operations alongside the woodroom of the pulp mill at Riverside. Pine logs are floated to the lumber department of the mill to be formed into cross arms, clapboards, laths, cedar shingles, window frames, boxes and shooks and cloth reels, while spruce logs on the other hand are diverted to the gangsaws of the pulp mill to be cut up into 2-ft. sticks for barking and chipping.

Visitors to the woodroom of the Brown Company never fail to be impressed with the care taken in the selection and subsequent washing of wood destined for conversion into the bleached sulphite pulp that goes to make a wide range of bond papers, and after special treatment is refined to form alpha cellulose, a preferred material for rayon manufacture, in addition to being a substitute for rags in the manufacture of high-grade bond papers, vulcanized fiber and nitrating tissue for smokeless powder, all of which call for a particularly pure form of cellulose. In one part of the plant, a limited amount of wood is ground by the mechanical process for the firm's own use in admixture with other pulps and old strong papers for conversion into fiber tubes which after different treatments appear as electrical conduits, water pipes with screw threads and screw fittings, and paper cores with metal ends enameled in different colors. The paper cores are remarkably light as compared with the old style of iron core but are said to stand wear and tear in a remarkable manner and can be used as many as eighteen times without showing signs of sagging.

The Androscoggin river has its rise several miles north of Berlin at a point where the Magalloway water joins a stream from Lake Umbagog near the Canadian border. It flows down New Hampshire and across the State of Maine, smaller streams dropping into it along the way until it empties into the sea 160 miles away. On its surface, in the vicinity of Berlin, lie many thousands of logs banked in places from shore to shore, some destined for conversion to lumber and pulp and paper at the Brown Company mill and others for the mill of the International Paper Company which operates sulphite and groundwood mills for its newsprint paper plant at Berlin not far from the Brown Company's mills, lying, indeed, between the Riverside and Cascade plants of the Brown Company in the very heart of the city of Berlin.

There is nothing new or novel about this picture of a log boom or river drive. It is a familiar scene in any great papermaking centre in New York State, Maine, Canada or the Fox River Valley in the Northwest. What makes northern New Hampshire unique among papermaking centres is the utilization of by-products of pulp and paper manufacture, for in Berlin the by-products of its wood-using industry are exploited like no other place; and it is now one of the greatest chemical centres east of Niagara.

We need go no further than this little town high among the forests of the White Mountains to see one of the finest illustrations of the relationship between the chemical engineer and big business. For the story of the Brown Company's development in Berlin as a manufacturer of chemical products is interwoven with the career of a young chemist. After a temporary engagement by Mr. Burgess for the construction of electrolytic cells to be used in the production of chlorine for bleaching sulphite fiber, this chemist, later to be winner of the Perkin medal for the most valuable work in applied chemistry, got the offer of a permanent job from Mr. Burgess and started work at the woodpile. The work was hard and labori-

Chemical Engineer and Big Business

Where Speed and Power Rule

Years of satisfactory service from their old Brownhoist convinced Chrysler engineers that Brownhoist is building the same speed and power into locomotive cranes as they build into their automobiles.

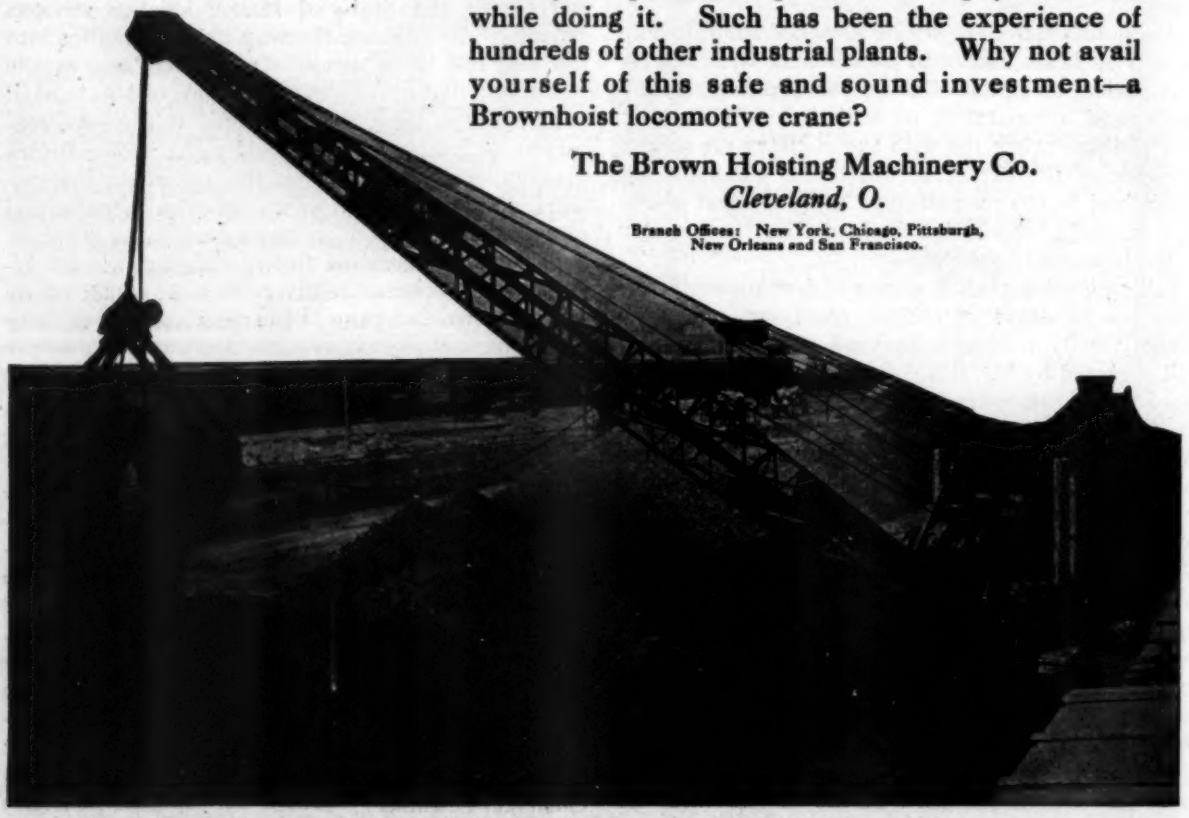
Brownhoist builds both large and small cranes, with creeper or railway truck mountings. We shall be glad to help you solve your handling problem.

Today, Chrysler with a typical industrial plant layout uses a modern Brownhoist 8-wheel steam locomotive crane to unload coal to storage, to load turnings and punchings with magnet and to switch cars in and out of their Jefferson St. yard in Detroit.

You too can select a Brownhoist crane of the proper size and mounting that will cover your yard, solve your particular problem and pay for itself while doing it. Such has been the experience of hundreds of other industrial plants. Why not avail yourself of this safe and sound investment—a Brownhoist locomotive crane?

The Brown Hoisting Machinery Co.
Cleveland, O.

Branch Offices: New York, Chicago, Pittsburgh, New Orleans and San Francisco.



BROWNHOIST

MATERIAL HANDLING MACHINERY

ous and he was unable to keep at it more than four days a week for which he was paid a weekly stipend of $4. Being ambitious to succeed, he made it his practice to see what was going on around the plant, particularly with regard to the detection of sources of waste in the mill and mill grounds. When the proper time came, he showed his employer where money could be saved and he was advanced from the woodpile to the office. Shortly after the Burgess fiber mill was absorbed by the Berlin Mills Company, the young chemist showed how the caustic from the electrolytic plant was wasted by drainage from sewer to river and he recommended the installation of an evaporating plant for saving it. This may be said to be the beginning of the great chemical industry which distinguishes the Brown Company mills from all others of its kind, though it should not be overlooked that chemical by-products are also produced on a large scale by firms like the Kimberly-Clark Company and the West Virginia Pulp and Paper Company, to mention but two of the larger concerns engaged in the reclamation of chemicals from waste products.

In the electrochemical plant of the Brown Company, starting with salt and electrical energy there is produced chlorine, caustic soda and hydrogen. The chlorine gas is made to undergo a liquefaction process by which liquid chlorine is produced which is shipped in tank cars to other mills in the New England territory for use in the bleaching of paper pulp and other purposes. The weak caustic liquor as it comes from the electrolytic cells is conveyed to heated receptacles where it is evaporated and fused to form solid and flake caustin, of which some forty tons a day are produced for sale on the outside. At the other end of the line, hydrogen gas is evolved and either combined directly with chlorine to form hydrochloric acid, or mixed with lime and water to make bleach liquor, which is shipped as such, or is combined with arsenous acid to form calcium arsenate, a chemical that is regarded as the most potent agent in use for the destruction of the boll weevil which plays such havoc with the cotton crop in the Southern States.

The most remarkable development of this electrolytic plant is concerned with the manufacture of chloroform, for two-thirds of all the chloroform used for surgical anesthesia in the United States is made by the Brown Company, of a purity surpassing the most exacting pharmacopeial requirements.

On the occasion of the Observer's visit, most of the hydrogen formed in the electrolytic production of chlorine and caustic soda was going to waste, only a fractional amount being saved for the manufacture of hydrochloric acid by direct combination of hydrogen and chlorine as stated above. Up to a year or two ago, the hydrogen now wasted was used for hardening vegetable oils in the production of a cooking fat called kream krisp by a catalytic process. It is understood that as soon as the company's peanut plantations begin to yield goobers, the manufacture of kream krisp will be resumed. During litigation with a soap company over patents on the process a few years ago, control of the peanut output was lost and when the Brown Company won the patent suit and was ready to start up again, supplies of peanuts were difficult to obtain except at a prohibitive price. Now that the company has taken up peanut culture on a large scale, it should not be long before an adequate supply of raw material is available and the housewife provided with the best kind of pie shortening at a moderate price.

A monograph, or even a series of monographs, might be written on the products of the Brown Company, as, apart from pulp and paper, lumber and kyanized lumber—as wood preserved with corrosive sublimate is called after the name of the inventor, Kyan—the by-products of the mills include lignin and sulphite waste liquor which is sold in tank cars for use as a road binder, core compound, briquetting agent and tanning extract; sulphur chloride, used for chemical processes of chlorination in one form and in another for the vulcanization of rubber or of oils and in making rubber substitutes and cements, as well as in the manufacture of military poison gas; carbon disulphide, the rubber solvent, insecticide and necessary ingredient in the manufacture of rayon, as well as of varnishes, matches, etc.; carbon tetrachloride, a substance used largely in the manufacture of fire extinguishers and unburnable cleaning fluids, and wood turpentine is also recovered.

In their own foundry and machine shop, the Brown Company forge metal caps for cores and metal boxes of various designs for holding the Nibroc paper toweling which is now made in large quantities and used everywhere. One department of the plant is set aside for the enameling and varnishing of metal parts with Duco, itself a cellulose derivative, which is sprayed instead of being brushed on the parts to give them an attractive surface.

The latest development at the Brown mills is an experimental rayon plant for the utilization of alpha cellulose, and it would cause no surprise to see a silk mill starting up at Berlin to use rayon yarn in the weaving of stockings. Then, as pointed out by Dr. David Wesson at one of the dinners of the chemical engineers, the town of Berlin as a wood-using centre could rightly use as its slogan: "From Logs to Legs."

Time of Safety Contest Extended

WITH the Adams Bag Company, the Neenah mill of Kimberly-Clark Company and the Upson Company tied for first place on June 30th in the Paper Industry Safety Contest, the contest for all mills is being automatically extended to such time as the tie is broken.

These three mills have operated 181 days without a lost time accident—a fine record. There is now, however, a good opportunity for a "near-by" to move into first place. The ranking order of each mill as of May 31st is listed in the National Safety Council News Letter of this month.

All contesting mills must not fail to continue sending in their monthly reports until the name of the winner is announced.

"Shall I buy for price or for quality?"

THE eternal question confronting every buyer—and this buyer in particular. Factory costs had been creeping upward. Overhead was 5% over the previous fiscal year. Wages and raw material were hovering at the same level. There was only one answer. Cut down expenses.

That very morning he had been told to reduce "old man overhead." It had to be done—but how?

Prices were lopped off here and there. No more big inventories. But when it came to felts—frankly, he was stumped. Prices were almost on a par—he received quotations on Appleton Felts, but they would cost approximately the same as the brand his mill was using.

Our service man called on him. He pointed out how the price buyer gets a slightly lower price at a great discount in quality. Other mills using Appleton Felts were paying no more, yet getting longer, more efficient service. Clearly it was a case of changing from one felt to a better one at no price advantage but at a great saving in the long run.

This buyer cut down his overhead with Appletons.

APPLETON WOOLEN MILLS
APPLETON WISCONSIN

Appleton
Felts and Jackets

THE PAPER INDUSTRY

REG. U. S. PAT. OFF.

Vol. 8 JULY, 1926 No. 4

The Effect of Catalysts in the Manufacture of Sulphite Pulp

By L. F. GOODWIN AND W. H. BIRCHARD

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IN THE past fifty years great advancement has been made in the art of paper making, but the underlying scientific principles have not been thoroughly understood. Scientific advancement has been hampered by a lack of definite information on the chemistry of the materials involved. Much work has been done in the last few years and much is now in progress but even yet our knowledge of the chemical reactions that go on within the digester is a matter of conjecture. Most of our present knowledge is obtained by working backwards. With a partial knowledge of the chemistry of wood and knowing fairly well the chemical composition of the waste liquor we are able to form a theory as to the actions that go on in the digester.

In the manufacture of easy bleaching sulphite pulp, the object of the wood is to remove the lignin and associated material and recover the pure cellulose. A solution of calcium and magnesium bisulphite in sulphurous acid is used and the spruce chips are boiled in this for from 8 to 30 hours at a temperature up to 145-160° C. and at 60-80 lbs. pressure. This method gives yields, according to Ehrenthal[1], of 44 per cent, falling to 30 per cent with poorer woods. Hagglund[2] gives the yield as 48-49 per cent which is nearer that obtained in practice. In comparison with these figures Cross and Englestad[3] obtained much better results by using an ammonium base in place of calcium and magnesium.

The principal reactions taking place during the cook are sulphonation and hydrolysis. The lignins are sulphonated to ligno-sulphonic acid and the carbohydrates and lower celluloses are hydrolysed. The cooking liquor at the end of the cook contain sugars, alcohol, aldehyde, cymene, acetic and formic acids and furfural. Knowing this much we are in a better position to judge what composition of acid to use. The cooking acid must contain, therefore, enough sulphur dioxide as sulphurous acid to complete the hydrolysis and sulphonation and it must contain a sufficiency of base to neutralize the ligno-sulphonic acid and sulphuric acid formed. The sulphuric acid is formed from the cooking acid. If there is a shortage of calcium and magnesium oxide in the acid the cook will become very dark, due to the decomposition products of the ligno-sulphonic acid. If the acid is low in SO_2, the hydrolytic action will cease before all the sugars are hydrolysed and a pulp of more impure cellulose and of harder bleaching qualities will result. An acid of high combine slows up the cook but strengthens the pulp, while an acid of low combine speeds up the cook but weakens the pulp.

It had occurred to the senior author that it might be possible to find a catalyst which would promote the sulphonation or hydrolysis or both reactions without an injurious effect on the fibers. In this way the cooking time might be shortened, the operating temperature reduced and the yield of cellulose increased.

In the manufacture of artificial silk, a pulp of very pure cellulose is desired, high in alpha-cellulose. As strength of stock is of secondary consideration, a short cook is used which causes a severe action of the acid on the cellulose fiber. This causes an appreciable reduction in the alpha-cellulose content. A catalyst which would promote the dissolution of the encrusting material and moderate the action of the acid would increase the yield of alpha-cellulose.

The object of the following experiments was to study the effects of different chemicals on the diges-

[1] J. S. C. I., 882A (1923).
[2] Svensk. Kem. Tidski. (36), 284, 1924.
[3] J. S. C. I., 253T (1924); 267T (1925).

tion of sulphite pulp with a view to obtaining a catalyst which would promote the sulphonation and hydrolytic action.

Apparatus Used

The digester used was a steel cylindrical shell which revolved on its horizontal axis and was driven by a small motor. The heavy steel head was fastened on with bolts and fitted with a copper relief pipe, with pressure gauge and relief valve attached. The steel head was also fitted with a brass thermometer well extending into the autoclave. The autoclave was built for general purposes so that a liner of any metal could be inserted. A copper or lead liner was used for these experiments, flanged over at the top, and the steel head was also completely covered with either a copper or lead plate. The relief valve being situated in the center of the head made it hard to control the cook by the usual tests, as only liquor could be drawn off during the first part of the cook and only dry gas during the latter part of the cook. With this type of digester it was also impossible to blow the stock at the end of the cook, so that some of the chips, although cooked, were not disintegrated when the digester was dumped. Owing to the fact that the digester could not be blown at the end of the cook, the digester was allowed to cool off before dumping.

The digester was heated externally by means of gas jets, thus permitting close temperature control to be maintained. The digester had a capacity of 4,450 cc. and revolved at 7 r.p.m.

The chips and acid were charged into the digester and allowed to stand over night. This was done to allow the acid to penetrate the chips and thus obtain a more uniform cook. If there is not satisfactory penetration by the acid the center of some of the larger chips will remain unresolved when the cook is finished. The same effect may be obtained, however, by lengthening the time required to raise the temperature to 100° C. and thus permit penetration by the acid.

The chips used in these experiments were 5/8" spruce chips as used in industry. The size of chips plays an important part in the cooking since the penetration is apparently principally capillary. Hence the chips should be free from slivers and knots. The ratio of heartwood to sapwood is also important, as has been shown by McKee and Cable.[4] Thus younger trees should give a higher yield than older trees, since the ratio of heartwood to sapwood is lower. The heartwood contains a higher percentage of resin and pitch and is therefore harder to resolve.

The acid used was made by passing sulphur dioxide into a solution of calcium monosulphite. Sufficient calcium sulphite is added to give the required base concentration and the SO_2 is passed in until the required total SO_2 is obtained.

TABLE I

No. of Exper.	Date	Wt. of B.D. Chips in Gms.	Vol. of Acid in Lit.	Cooking Time, Hours	Max. Cooking Temp., °C.	Acid Analysis			Dump Test, % SO_2	Yield of Unscreened Pulp	Screenings, %	Bleach Used, %	Ashcroft Strength	Ratio of Liquor to Chips	Remarks
						Total SO_2%	% SO_2 Free	Comb. SO_2%							
S-2 C-14	11/5/25	489	3.0	8	148	4.09	3.13	.96	.99	49.3	.26	10.1	93	6.1 :1	
S-2 C-14A	1/6/25	487.8	3.0	7½	149	4.09	3.13	.96	1.05	54.5	4.34	23.5	119	6.2 :1	
S-3 C-1	15/4/25	364.8	3.0	8	149	4.09	2.94	1.15	1.32	57.3	...	34.6	129	8.2 :1	4 gms. C. P. Phenol
S-3 C-2	16/4/25	364.8	3.0	8	149	4.06	3.07	.99	1.40	56.8	...	34.4	121	8.2 :1	4 gms. C. P. Phenol
S-3 C-3	17/4/25	364.8	3.0	8	149	4.06	3.07	.99	1.40	52.6	...	23.4	120	8.2 :1	4 gms. Phenolsulphonic Acid
S-3 C-4	22/4/25	364.8	3.0	8	147	4.09	3.10	.99	1.56	51.5	...	25.6	125	8.2 :1	12 gms. C. P. Phenol
S-3 C-5	24/4/25	364.8	3.0	8	149	4.06	3.04	1.02	1.60	52.2	...	34.5	116	8.2 :1	24 gms. $CaCl_2$
S-2 C-14A	1/6/25	487.8	3.0	7½	149	4.09	3.13	.96	1.05	54.5	4.34	23.5	119	6.2 :1	
S-3 C-6	9/6/25	478	3.0	7½	149	4.09	3.10	.99	.46	57.5	6.56	34.7	119	6.3 :1	20 gms. Me-Et-Ketone
S-3 C-7	12/6/25	483.8	3.0	7½	148	4.06	3.04	1.02	.25	62.7	16.9	49.9	120	6.2 :1	25 gms. 99.5% Acetic
S-3 C-8	18/6/25	478	3.0	7½	149	4.16	3.13	1.03	.96	59.0	3.55	31.1	111	6.3 :1	25 gms. NH_4Cl

Method of Analysis

The total free and combined SO_2 was determined by Winkler's method. The total SO_2 represents the whole of the SO_2 as sulphurous acid and bisulphite. The free SO_2 is the sum of the SO_2 as sulphurous acid and the half-free SO_2 of the bisulphite. The combined SO_2 represents half the SO_2 chemically combined as bisulphite.

Winkler's Method

Total SO_2: One cubic centimeter of the acid measured with a pipette is diluted with about 100 cc. of water and titrated with N/10 Iodine solution, using starch as indicator. The number of cc's of N/10 Iodine solution used multiplied by .3204 gives the total SO_2 in per cent.

Free SO_2: A separate sample of 1 cc. is titrated with N/10 Sodium Hydroxide, using Phenolphthalein as indicator. The number of cc's of N/10 caustic used multiplied by .3204 gives the percentage of free SO_2.

Combined SO_2: Subtract the free SO_2 from the total SO_2.

Yield

In determining the yield of unscreened pulp, the stock was first thoroughly washed in a wooden box with a copper screen bottom and whizzed in a centrifuge, revolving at 5,260 r.p.m. for one minute. The stock was then removed from the basket,

[4] Paper Trade J., Vol. 80, 151-6 (1925).

weighed and a moisture determination made on a hundred-gram sample. Several cross-sectional strips were used from the lap for the moisture determination.

Since it was impossible to disintegrate the chips by blowing them against a target, as in industry, samples of the centrifuged stock of one hundred grams each were weighed out and beaten in a ball mill for thirty minutes. Two samples were screened through a large Buchner and the per cent screenings was calculated on an oven-dry basis.

Strength

For testing strength, a hundred-gram sample of the centrifuged stock and a litre of water were placed in a 6″x7″ ball mill with a charge of pebbles weighing 1,600 grams. The whole was revolved for thirty minutes at 60 r.p.m. Three sheets 8″x8″ were made from each sample on a hand-sheet machine. The sheets were pressed between felts in a hand-press and allowed to dry openly at room temperature.

For purposes of testing, the three sheets were trimmed to 4″x7″ and weighed on an analytical balance. Each sheet was cut diagonally in half and each half sheet was punched four times along the diagonal with an Ashcroft tester. To compute the strength factor the total sum of the twenty-four bursting tests was divided by twice the weight of the three sheets expressed in grams.

Bleaching

The bleach tests were made, using a modification of the method given in the "Manufacture of Pulp and Paper," Vol. III, Sec. 8, p. 41. This is one of the set of five volumes published by the Pulp and Paper Association.

Ten grams of air-dry pulp were thoroughly masticated with 50 cc. of hot water in a tall 600 cc. porcelain beaker, and 20 cc. of bleaching solution of known strength added. The beaker was placed in a bath and kept at a temperature of about 35° C. for three hours, or until the stock was up to color. If the bleaching solution became depleted, as was indicated by potassium-iodide starch paper, more liquor was added. When a pure white color was obtained the pulp was washed free of chlorine on a Buchner funnel. The filtrate was caught and measured and 100 cc. was titrated with N/10 sodium thiosulphate. The percentage of bleach was calculated on an oven-dry weight.

Discussion of Results

A series of runs, S-1, was made, using a copper liner in the digester, but the results obtained were very unsatisfactory. The acid was badly depleted of SO_2 without completing the resolution of the stock and a thick coating of copper sulphide was deposited on the walls of the liner. The stock was very badly discolored. At the same time the sulphate content of the liquor increased from 4.435 gms. of SO_2 per litre combined as sulphate at the fifth hour, to 6.416 gms. of SO_2 per litre combined as sulphate at the ninth hour.

This trouble was apparently due to the fact that some of the fittings in contact with the acid were iron. It was noted that erosion was greatest where the copper and iron were in contact. An iron tee on the relief pipe was eaten through in a very short time. The steel head was also corroded, after several cooks, by the acid which penetrated behind the copper head plate.

These troubles were all overcome by using a lead liner and head and bronze fittings. Any chance of electrolytic action being set up was removed.

After replacing the copper liner with a lead one, a second series of cooks, S-2, was run in order to determine a cooking condition such that the stock was barely cooked, so that, if any catalytic action were exhibited by the chemicals used, the result would be more readily apparent.

Whilst determining the conditions for a standard cook, close observation was kept on the various cooks to determine the variation in the quality of the pulp obtained, when using different strengths of acid and different cooking times.

The cooking chart used was based on a number of commercial charts. The cooks and analyses were carefully conducted, so as to establish accurate standard conditions, and these were then found to be readily reproducible, so that any variation in future cooks could be confidently ascribed to a change in the experimental conditions. The standard charts finally followed were those of S-2 C-14 and S-2 C-14A (see Table I). The difference in these two cooks is simply one of time, and it will be noticed that half an hour in the cooking time makes an appreciable difference in the yield, strength and bleach consumption. It is quite to be expected that with an increase in the yield there will be an increase in the bleach consumption, since the lignin is less completely removed from the pulp. If the bleach consumption does not increase with the yield, it would indicate that the lignin had been more completely removed without attacking the cellulose, a condition which is desired.

It was found that 0.95 per cent combined SO_2 was as low as the combined could be reduced to without fear of burning the cook, and although the total SO_2 could be reduced below 4.00 per cent, it was not deemed advisable to go below this figure. A variation in temperature has a far greater effect on the cook than a variation in the strength of the cooking liquor.

Having determined a standard cooking condition, a third series of cooks, S-3, was run, trying various chemicals as catalysts. Kalb determines the cellulose content of wood by means of phenol. Acting on this suggestion, cooks C-1, C-2 and C-4 of this series were run, using 4 gms. and 12 gms. of phenol. The chemical tried in each case was added just before the cook commenced.

The high dump test would indicate that the action

of the acid on the chips had been retarded. The chips were not completely resolved and showed poor penetration by the acid. The relief liquor exhibited an odd sheen and on standing, exposed to the air, turned quite dark. The stock had a white appearance when washed, but on standing and on beating turned decidedly pink. The strength of the stock, although apparently increased somewhat, is due principally to the under-cooked condition of the stock. The increase in the amount of phenol used did not affect the cook.

It was thought that possibly phenolsulphonic acid might have some effect, so 4 grams of phenolsulphonic acid were used in cook C-3. The quantity employed was such as might be economically used in industry. An expensive catalyst which would have to be used in large quantities would not be feasible on account of its cost. The results obtained were quite similar to those of cooks C-1, C-2 and C-4, except that the stock was not quite so pink and that the bleach consumption was reduced. This would indicate that phenol products had been deposited on the fiber in cooks C-1, C-2 and C-4, causing the pink color and increasing the bleach consumption.

Miller and Swanson claim that salts of strong acids, when added to the sulphite cooking liquor, increase the rate of reaction, but such results were not substantiated by the results of cooks C-5 and C-8 of this series. In the former cook 24 grams of calcium chloride was used and in the latter 25 grams of ammonium chloride. In both cases the cook was slowed up, as shown by the high yield and bleach consumption as compared with the standard cooks. Although the strength was increased somewhat by the calcium chloride, the addition of ammonium chloride gave a weaker stock.

It is claimed by some mill men that the addition of relief acid to the fresh acid used in cooking increases the speed of the cooking reaction. This increase in the speed of the reaction must be due to the catalytic effect of one or more of the compounds formed during the cook. Assuming that this is so, runs were made using methyl-ethyl-ketone in cook C-6 and acetic acid in cook C-7. Plans are being made to extend this investigation, using several other chemicals.

The condition of the resulting stock and the low dump test shows that the cooking acid was partly destroyed by the use of the ketone and acetic acid at the temperatures used. The chips were only partly resolved, particularly in cook C-7. The bleach consumption was very high on this account.

The spent liquor was of a very light color in each of the cooks in this series.

The results of cooks C-6 and C-7 show in an exaggerated way the effect, on the cooking of acid, of the formation of ketones and acetic acid during the cook. These are apparently acted on by the cooking liquor, at the temperature used, using up the available SO_2.

Table II shows the results of representative cooks numbers C-10, C-11, C-12, C-14A and C-16A of Series 2 obtained while standardizing the cooking conditions.

TABLE II

No. of Exper.	Date	Wt. of B.D. Chips in Gms.	Vol. of Acid in Lit.	Cooking Time, Hours	Max. Cooking Temp., °C.	Acid Analysis: Total SO_2%	Acid Analysis: Free SO_2%	Acid Analysis: Comb. SO_2	Dump Test, % SO_2	Yield of Unscreened Pulp	Screenings, %	Bleach Used, %	Ashcroft Strength	Ratio of Liquor to Chips	Remarks
8-2 C-10	27/4/25	456	3.0	8	147	4.06	3.23	.83	.64	46.3	1.2	16.1	90	6.6 :1	Lime Base
8-2 C-11	29/4/25	388	3.0	8	149	4.06	3.45	.61	.96	43.5	.41	16.8	67	7.7 :1	Lime Base
8-2 C-12	1/5/25	388	3.0	8	151	3.97	3.20	.77	1.05	48.1	2.68	21.2	94	7.7 :1	Lime Base
8-2 C-14A	1/6/25	487.8	3.0	7½	149	4.09	3.13	.96	1.05	54.5	4.34	23.5	119	6.2 :1	Lime Base
8-2 C-16A	18/5/25	492	3.0	7½	151	4.09	3.13	.96	1.47	48.3	1.41	28.4	114	6.1 :1	{.50% SO_2 as Ca $(HSO_3)_2$ {.46% SO_2 as Mg $(HSO_3)_2$

Summary

1—A lead-lined, gas-heated, revolving autoclave was developed for cooking sulphite pulp and a series of cooks run to standardize conditions.

2—A series of cooks were run under standard conditions, using chemicals which it was thought might have a catalytic effect on the cooking action and the results were noted.

Rosin Sizing of Paper

FOR the prevention of premature coagulation of the rosin size when mixed with hard water in the beater, says R. Lorenz, it is not advantageous to work with highly concentrated rosin milks, because the tendency to spontaneous coagulation of a colloidal solution increases with its concentration. Flocculation under the influence of hard water is not governed by the quantity of the hard water but by the concentration of the hardening constituents.

The most effective means of preventing flocculation of the rosin size emulsions by hard water is the addition of a protective colloid, provided it is not so powerful as to prevent flocculation at a later stage when the alum is mixed with the pulp.

Experiments with the Plauson colloid mill have indicated that effective sizing could be produced by mechanical means alone, by grinding the rosin with the pulp to a sufficiently fine state of subdivision.

Lessons in Paper Making

Lesson II—Dryer Felts

By HARRY WILLIAMSON
Class Instructor, Champion Fibre Co.

This article is the second of a series of lessons in practical paper making, appearing each month in The Paper Industry by arrangement with the Champion Fibre Company, Canton, N. C. These lessons are a part of the general educational course conducted by this company under the direction of Mr. J. Norman Spawn, educational director.

OPINIONS differ greatly as to which side a dry felt will run toward when tightened up. Some paper-makers say the tight side, while others, equally positive, say the slack side. They are both right. The deciding factor as to which side a felt will run depends on the direction the felt is traveling when it comes in contact with the hitch roll.

A man usually quotes such matters according to his experience and if he has operated machines of a tight side felt design only, he is apt to be convinced that all dry felts will run to the tight side.

A short study of the principles involved will enable us to clearly understand the method of control, the point at which control is strongest and the manner in which such control can be best applied.

The sole plates of the machine form two parallel lines. Every roll in the machine—breast roll, couch roll, felt rolls, press rolls, dryer and calender rolls—is set at right angles to the sole plates, the junction of the roll and the frame forming an angle of 90 degrees.

If no other influence were brought to bear, the felt with its seam sewn at right angles to the frame, would maintain its central position and run true.

The variation of temperature, causing an increase or decrease of the tension exerted on the felt, a variable moisture content of the paper coming in contact with the width of the felt, hot bearings causing rolls to drag, faulty weave in the construction of the felt, or any untold incident which causes one side to stretch longer than the other, will force the felt out of its central position, necessitating the use of guide rolls to check it back again into its central line of travel.

Under normal conditions the edges of the felt forming two sides and the point of contact of the felt across its width with any two adjacent rolls, form a series of perfect rectangles.

The guide rolls are adjustable, enabling us to move one side forward or backward, thus altering the point at which the felt comes in contact with the roll.

Figure 5 shows a plan of the return journey of a top dry felt.

The rolls in section A, B, C, and D, with the edges of the felt, would form perfect right angles, while sections E and F, owing to the hand guide roll being set forward on the front side, are not rectangles.

For the purpose of studying the control of the felt, we need not therefore take the felt as a whole but as individual rectangles.

Each rectangle is similarly operative in its effect on the felt, the amount of effect depending on the "arc of contact" the felt makes with the rolls concerned, the length of felt from one roll to the other and the direction in which the felt is traveling.

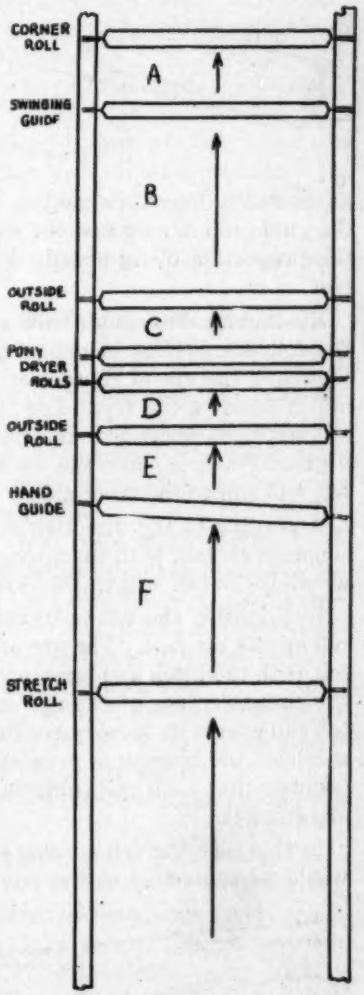


Figure 5

Rules Governing Control

Move the guide roll in the direction the felt is traveling; when the felt comes in contact with it, the felt will then run away from you. Conversely, move the guide roll against the travel of the felt and the felt will come towards you.

Action depends on the arc of contact of the felt with the roll.

The amount and speed of action is governed by the amount of arc of contact. The greater the arc of contact, the faster and greater will be the control exerted.

In any one rectangle, the roll ahead in the direction the felt is traveling has control of the preceding rectangle of the felt coming towards it.

The point of control in any one roll is at the point in the arc of contact where the greatest tension or weight of the felt is exerted.

A guide roll is preceded by a long rectangle of felt and succeeded by a short draw. By this means, the control of the felt gained by the guide roll will be maintained by the tightness of the felt passing over the control roll in the short rectangle ahead.

The Guide Roll

The arc of contact of the felt with the guide roll is small, the felt coming in contact with the roll just behind the center. The control exercised by the

Figure 6

guide roll is therefore gentle. The draw preceding the guide roll is long and the succeeding draw short, the proportion being usually 3 to 1, or 12 feet to 4 feet.

By moving the guide roll against the direction the felt is traveling as indicated by dotted circles in Figure 6, the arc of contact of the felt with the roll is increased on the front side; the weight or tension of the felt is applied to the front side of the roll in a greater degree than the back side; therefore, the felt will run to the front side.

According to the direction of travel when the felt comes in contact with the hitch roll, we can determine whether the felt will travel to the tight or slack side.

In Figure 7, the felt is traveling toward the hitch roll on the top side. The arc of contact made by the felt with the hitch and stretch rolls is more than half the circumference of the roll and the point at which the roll exerts its most powerful influence on the felt is where the tension is greatest. We must also remember that each roll controls the rectangle of felt preceding it.

In this case the felt coming towards the hitch roll would be controlled at the point (A); then the felt

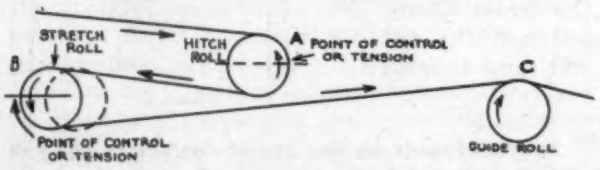


Fig. 7—The hitch and stretch roll combination—A tight side design

from (A) to (B) would be controlled at the point (B). Similarly the felt from (B) to (C) would be controlled at the point (C).

At the point of greatest control on the stretch roll, which is the roll to adjust, the felt is traveling in the direction (B) to (C).

Following the general rule of guiding clothing, if we move the stretch roll on the front side as indicated by the dotted circle, in the direction the felt is traveling, that is (B) to (C), we are slacking back the front side and the felt will run **away from us**; that is, the felt will run to the **tight side.**

A quicker way, for practical purposes, to determine the question is to take the longest draw of the

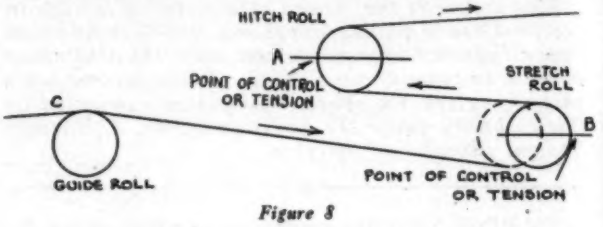


Figure 8

hitch roll and the stretch roll, note its direction of travel, then use the stretch roll as you would a guide roll.

In Figure 7, the draw coming to (A) and the draw (B) to (C) are both longer than the draw (A) to (B), and are traveling in the same direction, which is opposite to the draw (A-B).

The longest draw is (B) to (C) and in using the stretch roll as we would a guide roll on this draw, we find the felt is a **tight side** felt.

In Figure 8, the felt is traveling towards the hitch roll on the bottom side. The control points are (B) and (A). (B) controls the draw from (C) to (B), while (A) controls the draw (B) to (A). The longest draw is (C) to (B) and the felt is traveling towards (B).

Therefore, if we move the stretch roll (B) towards (C), that is **against** the travel of the felt, we are again slacking back the front side and the felt will come **towards us**, running to the **slack** side.

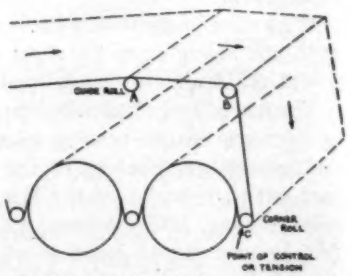


Fig. 9—Corner rolls—Tight and slack side

Sometimes, owing to a fault in the weave or exposure of one end of the felt to the atmosphere during transit, we find a felt which has one side considerably tighter than the other. Such a felt will persistently run to one side of the machine despite the efforts of the guide rolls to keep it central.

If the machine has a tight side design, the felt will run to its tight edge all the time, even with the guide checked well over in the opposite direction. This condition can be remedied and the guides allowed to work in central position by altering one of the corner rolls—either the one around which the felt runs, to come in contact with the dryers or the

one around which the felt runs when leaving the dryers.

To do this, we must know what will occur when we move one of these rolls, because they work opposite to each other. The following rule holds good:

a—The roll around which the felt runs to **come** in contact with the dryers will send the felt to the **slack side.**

b—The roll around which the felt runs to **leave** the dryers will send the felt to the **tight side.**

Figure 9 shows the felt coming in contact with the dryers. Remembering our rules, the rectangle of felt (A) to (B) is controlled by roll (B). The rectangle (B) to (C) is controlled by the corner roll (C).

If we tighten down the front side of the roll (C), the point of control is going down in the same direction in which the felt is traveling and the felt will run **away from us** —that is, the felt will run to the **slack side.**

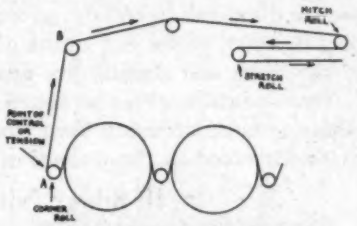


Fig. 10—Corner rolls—Tight and slack side

Figure 10 shows the felt going around the corner roll to **leave** the dryers. If we tighten down the roll (A), the point of control is going down **against** the direction in which the felt is traveling; therefore, the felt will run **toward us**—that is, the felt will run to the **tight side.**

In this instance, it will be noted that the action takes place **from a short** draw **to a long** draw. The action will be quick, but a portion of the action will be lost because the arc of contact which the felt

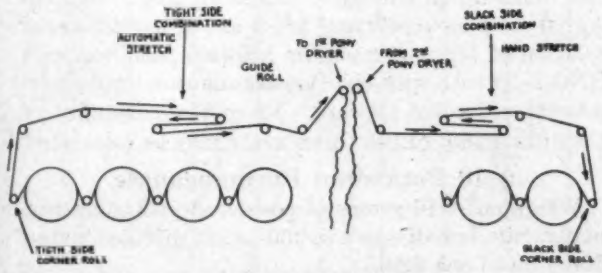


Fig. 11—Key Sketch

On many machines, when running dryers in one section only, there will be two pony dryers to dry out the felt. The automatic stretch will be a tight side design at the dry end and the hand stretch will be a slack side design at the wet end

makes with the roll (B) is smaller than what the felt makes with the roll (A) and is therefore weaker.

Altering this particular corner roll will have a tendency to cause the felt to swing slightly. In any case, corner rolls should never be altered unless it is a necessity.

Standard Sulphite Mill Solutions

By M. W. PHELPS, B.A.Sc.

HAVING been recently engaged in a search for ready methods of preparing standard solutions for use in the sulphite mill, I gathered together and tested the methods noted herewith. Thinking they may be of value to others engaged in the manufacture of sulphite, I present them as follows:

n/10 and n/16 Sodium Hydroxide Solutions

Stock Solution—Weigh out roughly 320 grams of caustic soda sticks and dissolve in 500 c.c. of distilled water. Cool, and make up to one litre.

8 c.c. of this soln. diluted to 1 litre = n/16 NaOH (approx.)

12.8 c.c. of this soln. diluted to 1 litre = n/10 NaOH (approx.)

Pipette out 25 c.c. of acid check solution into a casserole, dilute, and titrate with the soda solution using methyl orange or red as indicator. Adjust strength of soda solution to exact normality.

Check Solution—Standard hydrochloric acid (n/10 approx.).

Measure out 8.5 c.c. of concentrated HCl and dissolve in 200 c.c. of water. Cool and dilute to one litre.

Dieckmann [1] and Kolthoff [2] recommend re-crystallized borax for acidimetric standardization, claiming that the carbonate is an unsuitable standard since it is hygroscopic and of difficult endpoint.

Borax for standardizing—

Re-crystallize C.P. borax from water and drain on a Büchner. Partially dry the crystals by pressing between filter paper and then complete drying in a dessicator at 60 to 65 per cent relative humidity (NaBr. $2H_2O$-sat. soln. or 1.267 spec. grav. sulphuric acid).

Equivalent weight of borax = 190.61.

Weigh out one gram of the re-crystallized borax and dissolve in 200 c.c. of water. Titrate with standard acid using methyl red as indicator.

One gram re-crystallized borax = 52.46 c.c. of n/10 acid.

$$\text{Normality of the acid} = \frac{5.246}{\text{Titre in ccs.}}$$

Check Solution—Standard sulphuric acid (n/10 approx.).

Mix 3 c.c. of conc. C.P. sulphuric acid with 200 c.c. of water and make up to one litre.

Pipette out 50 c.c. of this acid solution and add to 200 c.c. of hot water in a beaker. Acidify with 4-5 drops of conc. HCl and bring to near boiling on the hot place. Also acidify a 10 per cent $BaCl_2$ solution with 4-5 drops of conc. HCl and heat to near boiling.

By means of a pipette allow a few drops of the $BaCl_2$ soln. to fall into the hot acid solution. The addition should be slow at the beginning and con-

[1] Dieckmann—Sulfitzellstoff, Band II, S 349.
[2] Kolthoff—J. Am. Chem. Soc., 48, 1453 (1926).

tinued until no further precipitation is observed. Finally, add 10 c.c. of $BaCl_2$ solution and leave the precipitate to digest at a temperature just under boiling for an hour.

Pour the hot supernatant liquid into a filter, wash the precipitate with hot water several times by decantation, and finally transfer the $BaSO_4$ to the paper. Wash till free of chlorides, dry, and ignite moderately to constant weight.

$$\text{Normality of the acid solution} = \frac{BaSO_4 \times .4202}{.2452 \times 10}$$

n/10 and n/16 Iodine Solutions

Stock Solution—Dissolve 600 grams of potassium iodide in 500 c.c. of hot water and add 397 grams of iodine crystals with constant stirring. When all has dissolved, cool and dilute to one litre.

20 c.c. of this soln. diluted to 1 litre = n/16 iodine (approx.).

32 c.c. of this soln. diluted to 1 litre = n/10 iodine (approx.).

Pipette out 25 c.c. of tnio. check solution, dilute and titrate with the approx. iodine solution. Adjust to exact normality.

Check Solution—Standard sodium thiosulphate (approx. n/10).

Dissolve 25 grams approx. of sodium thiosulphate crystals in 500 c.c. of warm water, cool and make up to one litre. Let stand one week before standardizing.

(a) Potassium Iodate Method

$$KIO_3 + 5KI + 6HCl = 3I_2 + 6KCl + 3H_2O$$

Dissolve 3.567 grams of C.P. potassium iodate in 200 c.c. of water and make up to one litre. This solution is n/10 exact.

To 25 c.c. of 10 per cent KI solution contained in a 250 c.c. Erlenmeyer, add 15 c.c. of 1:1 HCl.

Note: The iodide used must contain no iodate. A little starch solution may be added to an acidified solution of the iodide when a blue color indicates the presence of iodate.

Pipette in 25 c.c. of iodate solution and shake well one minute. Dilute with 100 c.c. of water and titrate the liberated iodine with thiosulphate solution, adding starch solution near the end. Calculate the normality of the thiosulphate solution.

The iodate solution is relatively stable but should be freshly prepared every six months. The thiosulphate solution should be checked at least every month.

(b) Potassium Dichromate Method

$$K_2Cr_2O_7 + 6KI + 14HCl = 3I_2 + 8KCl + 2CrCl_3 + 7H_2O$$

Dissolve 4.9033 grams of C.P. potassium dichromate crystals in 300 c.c. of distilled water and make up to one litre.

Pipette out 25 c.c. of the n/10 potassium dichromate into a 250 c.c. Erlenmeyer, add 30 c.c. of 10 per cent potassium iodide solution (free from iodate), and 15 c.c. of 1:1 HCl. Shake well one minute and dilute with 100 c.c. of water. Titrate with thiosulphate solution until the yellow color has nearly gone, then add starch solution and continue until the blue changes to a chrome-green color.

n/10 Sodium Arsenite Solution

1—Dissolve 5 grams of powdered C.P. arsenious oxide in a hot solution of 20 grams of C.P. sodium carbonate in 300 c.c. of water. Stir frequently. When clear, filter, cool and dilute to one litre. Titrate with n/10 iodine and adjust the normality.

2—Weigh out 5 grams of C.P. arsenious oxide into a 400 c.c. beaker and warm with 20 c.c. of 25 per cent NaOH solution. When dissolved, add 100 c.c. of water and a drop of phenolphthalein indicator. Add 1:1 H_2SO_4 solution dropwise from a pipette until the solution is decolorized. Pour into a volumetric flask, add a filtered solution of 20 grams of sodium bicarbonate dissolved in 500 c.c. of water. If the solution becomes red, add a few drops of 1:1 H_2SO_4. Dilute to the mark and standardize against n/10 iodine.

This solution gives a sharp and final endpoint which is more accurate than that obtained with the oxide dissolved in the normal carbonate.

n/10 Silver Nitrate

Dissolve 17.1 grams of C.P. silver nitrate crystals in 200 c.c. of water and make up to one litre.

Check Solution—n/10 sodium chloride.

Dissolve 5.846 grams of C.P. sodium chloride in 200 c.c. of water and make up to one litre. Pipette out 25 c.c. of this NaCl solution, add 5 drops of 10 per cent potassium chromate solution and titrate with the silver nitrate. Adjust normality.

1 c.c. n/10 NaCl = 0.003545 grams chlorine

n/10 Ammonium Thiocyanate

Weigh out about 8 grams of the crystallized salt and make up to one litre. Transfer 25 c.c. of n/10 $AgNO_3$ to a casserole and add 3 c.c. of a 10 per cent solution of ferric ammonium sulphate acidified with HNO_3. Titrate with thiocyanate solution until a permanent red color appears. From the normality of the nitrate that of the thiocyanate may be calculated.

n/10 Potassium Permanganate

Weigh out 3.16 grams of powdered potassium permanganate and dissolve in 250 c.c. of distilled water. Make up to one litre.

Standardization—C.P. sodium oxalate.

Weigh out 0.3 gram of pure sodium oxalate and dissolve in 200 c.c. of water at 90°C. Add 20 c.c. of 1:1 sulphuric acid and titrate slowly with the permanganate solution—at the rate of 15 c.c. per minute—until the endpoint is nearly reached. Then add dropwise until the endpoint is reached. Perform a blank with water at the same temperature and acidity. Keep temperature at endpoint over 60°C.

0.3 gram sodium oxalate = 44.8 c.c. n/10 $KMnO_4$ solution.

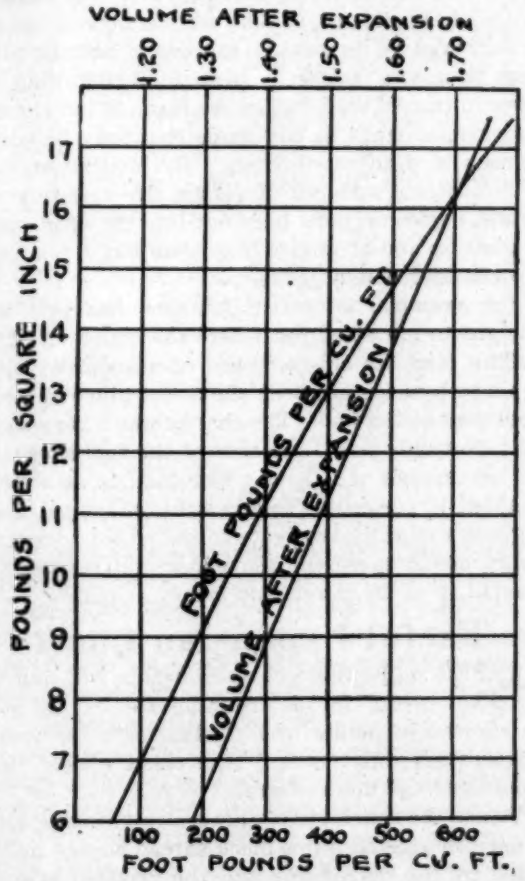
Pointers for the Engineer

By W. F. SCHAPHORST, M. E.

Power of Dust Explosions in Paper Mills

WE OFTEN hear expressions of amazement regarding the destruction caused by dust explosions. It is considered by many that there is something mysterious about dust explosions—that the tremendous forces cannot be accounted for. That, however, is not true. Dust explosions occur "scientifically," the same as explosions in an automobile engine.

In paper mills, when trimming and edging paper considerable dust is created. Where stones are used



for cutting instead of knives the amount of dust is liable to be considerably greater. Explosions have been known to occur due to the ignition of accumulations of this dust on rafters and elsewhere.

In an effort to determine the energy in dust explosions, the writer has done some figuring basing his computations on data found in books and other published mediums.

In the book, "Dust Explosions," by Price & Brown, I find that paper dust, when ignited in a closed chamber or room, will create a pressure of 12.8 lb. per sq. in. Right there, however, the figures stop and nothing further is said concerning the enormous power wrapped up in this high pressure gas which may create so much havoc and money loss.

My computations show that where the pressure is 12.8 lb. per sq. in. in a room 10 ft. x 10 ft. x 10 ft., or 1,000 cu. ft., the air after expansion would occupy a volume of 1,560 cu. ft. or an increased volume of 56 per cent. I find that each cubic foot of the converted gas has a capacity for doing 390 foot pounds of work. In other words, if all of the energy in the room 10x10x10 ft. could be concentrated on a body weighing 1 ton, or 2,000 lbs., it would lift that weight 1 ton, to a height of 195 ft. In other words, it would be able to throw 10 men each weighing 200 lb. to a height of 195 ft.; or, one man weighing 200 lb. to a height of 1,950 ft.

Herewith are some curves that were plotted by myself from the results of computations showing the relation between the pressure due to dust explosions and the amount of work that each cubic foot of air will do, depending upon the initial pressure developed during the explosion.

Throughout this entire range, actual examples are given of dust in the various industries that are explosive, ranging from 17.5 lb. per sq. in. down to 6 lb. per sq. in.

According to records of 270 dust explosions, 444 lives were lost in 66 of them and 780 people were injured in 83 of them. In 132 explosions the total money loss amounted to $32,917,000, or over $250,000 per explosion. Chiefs of the Bureau of Chemistry inform us that over 21,000 plants in the United States alone are continually confronted by this hazard. These industries manufacture about $7,000,000,000 worth of products per year.

The California Oil Fire

PAPER mill engineers have doubtless read about the recent fire in California which consumed over 8,000,000 barrels of crude oil. The fire was caused by lightning.

The enormousness of that loss will be more fully appreciated when one figures the amount of power it represents. California crude oil has a heat value of about 18,000 British thermal units per pound and there are 8 pounds per gallon. Each barrel contains 42 gallons. Assuming that 20 per cent of the heat value of oil is converted into power in steam power plants, this amounts to 433,000 continuous horse-

power for one year of 365 days, operating day and night.

Or, burning the oil in Diesel engines, it represents over 600,000 continuous horse power. This is based on 9,000 B.t.u. per hour, which is conservative.

In other words, the amount of energy lost in that fire is equal to all the energy that can be obtained from Niagara Falls for a period of six months. According to Engineering Magazine, 1925:

> "Making the fair assumption that 60 per cent of the gross energy in the water of these rapids can be transformed into electric current, the output of plants utilizing the entire flow would reach 1,200,000 horse power."

"Nature," April 7, 1910, printed this:

> "It is estimated that an average of 222,400 cubic feet of water pass over the falls each second. This is 25,000,000 tons per hour, or about one cubic mile a week."

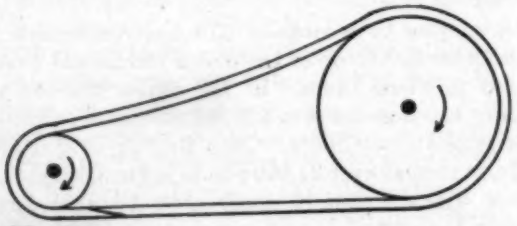
During the year 1925, the entire state of California marketed 117,346,391 barrels of fuel oil. This fire, therefore, wiped out nearly 7 per cent of California's yearly sale receipts. It WAS a big fire, but it takes figures like the above to drive the fact home. Lightning rods would probably have saved the oil.

Idlers, Belts and Pulleys

NOT long ago I read this in a prominent engineering journal:

> "This idler is near the driven pulley, which is contrary to the best engineering practice."

It is not poor engineering practice to place an idler pulley near the driven pulley



is the smaller of the two. The best practice is to always place the idler close to the small pulley, regardless of whether it is driven or driving.

It was also stated that if a belt is run "against" the lap, the belt is liable to go to pieces if moisture is in the room. The direction of the lap is dependent more upon the direction of slip than it is upon the direction of motion of the belt. Since slip is usually greater on the smaller pulley than on the large pulley and since slip is always toward the tight side, it is evident that in a drive such as shown in the figure herewith, with the small pulley as the driving pulley, the direction of the lap should be in the direction as indicated so that the joint will have as little tendency to roll or peel as possible. True, when the joint is on the larger pulley, the slip is in the opposite direction and there is a tendency to peel or roll, but the peeling tendency is less severe than on the smaller pulley. The direction of motion of the belt which was at one time regarded as the criterion is therefore of less importance than the question: "on which pulley is the belt liable to slip most?" The answer is: Slip is always greater on the small pulley.

The same writer recommended facing pulleys with leather. I would discourage the use of leather covers unless absolutely necessary because such covers are conducive to excessive wear. If a drive is properly designed, if the belts are wide enough, and if the pulleys are large enough, there is seldom any necessity for leather or canvas covers.

Baffling Vertical Boilers

MOST paper mill engineers know that there has been a vast improvement in the baffling of horizontal boilers during recent years. But it is not commonly known as yet that vertical boilers can also be improved by the modern method of baffling. Baffling is now a science. Instead of following the tubes in the old way, baffles are made to cut through the various banks at any angle that may be advantageous to highest efficiency. By modern methods of reinforcing and use of plastic fire resisting materials, baffles are now built out into the open spaces in position and at angles that were but a few years ago considered impossible.

For example, an actual instance has just been brought to my attention where the changing of the baffling from its old-fashioned or standard position to a new position has been the direct cause of saving 7 per cent of the fuel. The change was a very simple one. Not only was 7 per cent of the fuel saved, but the percentage of CO_2 was increased to an average of about 12 per cent. This is a thing that paper mill engineers might investigate to their own advantage. Every dollar saved for the paper mill represents a possibility of an increase in salary or bonus.

Useful Expansion Chart

PAPER mill engineers and officials will find this chart useful for determining the expansion to be allowed in piping, rods, tubes, etc., for various temperature differences. This chart makes "long-hand figuring" unnecessary.

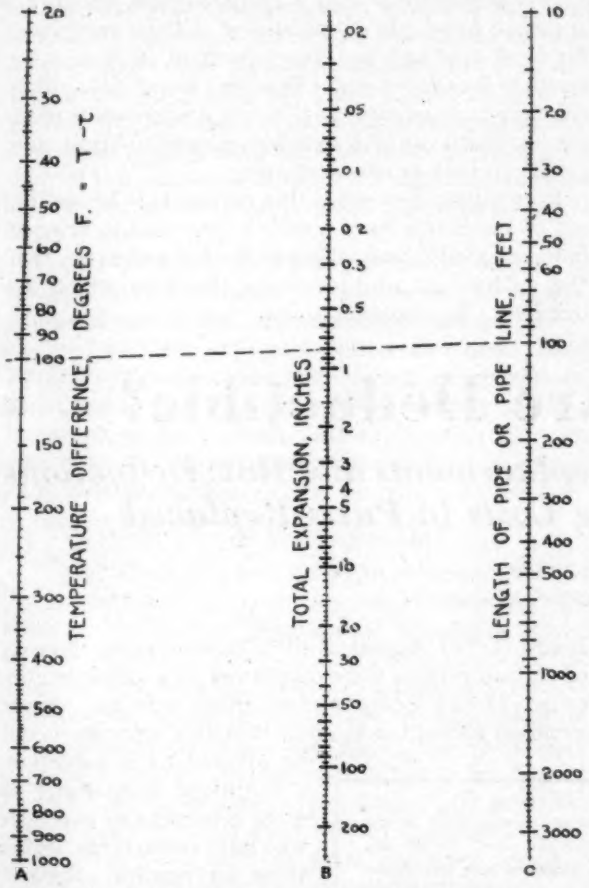
To use the chart, simply lay a straight edge across it once, or stretch a fine black thread across, as indicated by the dotted line and the problem is solved without further ado.

For example, a certain pipe line is installed which is 100-ft. long. It will be subjected to a temperature variation of 100-deg. Fahr. What will be the total expansion in inches?

Connect the 100-deg. temperature difference, column (A), with the 100-ft. length, column (C). The intersection with column (B) gives the answer

as 0.8 inch. That's all there is to it. Simple, indeed.

Inversely, the chart can be used for determining the allowable temperature difference where a definite amount of space is available for expansion and contraction. Thus, if the length of the pipe is 100 feet and the allowable expansion is 0.8 inch, the same line



would show that a temperature difference of 100 degrees Fahr. would be the limiting amount.

Also, if the factors in columns (A) and (B) are known, the unknown in column (C) is immediately found. In other words, if any two of the factors are known, the third is very quickly found, and without any computing whatever.

It will be noted that the range of the chart is wide enough to take care of almost any expansion or contraction problem that the engineer may have to contend with. The temperature difference, column (A), varies all the way from 20 degrees to 1,000 degrees. It is very seldom, if ever, that we have as high a temperature as 1,000 degrees. The length of pipe line, also, is great, varying all the way from 10 feet to 3,000 feet, or more than half of one mile. And the total expansion between these limits varies all the way from 0.2 inch to 200 inches. It is interesting to note that if we had a pipe line 3,000 feet long, with a temperature difference of 1,000 degrees, the expansion would be over 200 inches.

What Fires Are Costing

GRASS and forest fires have cost the people of the cut-over South much more than all their other taxes and fire insurance combined. In the interest of this cause and for the benefit of its members, the Pine Institute of America Incorporated, Gull Point, Fla., have published in their Bulletin No. 1, seven points which constitute the title "What Fires Are Costing", and for their general value we quote them as follows:

1—Preventing grass fires and forest fires will save in ten years the cost of a standard concrete road around each township where such fires burn regularly.

The benefits of preventing grass and forest fires are ten times greater than the cost. That means one thousand per cent dividends on the investment. No other investment in your country offers a tenth of such dividends so securely.

2—Trees and crops do not thrive without HUMUS. Humus is necessary to hold moisture in the soil and for the bacteria which make fertility. Commercial fertilizer on a soil without humus has little value. Southern soils particularly need abundant humus.

Where land is burned over frequently the loss of humus and plant food amounts to about one inch per acre in ten years. One inch of humus from one acre of land weighs from ten to twelve tons. It has a greater value than commercial fertilizer.

The man who would sell the humus off his land might better sell the land, because taxes remain with the land but the value of the land goes with the humus. The man who burns his humus does not even get the credit of giving it away.

3—For grazing purposes it has been proved by actual demonstration over and over again that unburned pasture land produces from two to six times more feed in a single season than burned-over lands do. The longer the fires are kept off, the better the grazing. This should be and can be proved in your county.

4—Rough pastures and woods hold their moisture while burned lands do not. Burned lands suffer in drought more than unburned lands.

The run-off water, after rain on burned land, carries away the top soil, the potash and other plant-food.

The sun and wind on burned land takes up the moisture which does not run off, and thereby cakes and hardens the soil so that things do not grow well in it. Every fire lessens the growing-power of the land.

5—Burning the woods prevents natural seeding and baby trees. Most of those that do start die soon, and the rest rarely, if ever, have a normal growth. No forests or poor forests are certain results of yearly woods firing.

The loss in forest products from this cause on about eighty million acres of Southern land during the past twenty-five years amounts to no less than four billion dollars. This is fifty dollars an acre at present values. Figure it for the lands in your county that have been burned frequently.

This absence of thrifty young pines which should have grown in the Southern coastal plain states is a loss many times as great as the people of the same states have paid for taxes in all the twenty-five years.

Nature will speedily restock most of the cut-over lands, if fires are kept out.

6—Modern forestry, forest industries and agriculture combined will support many times our present population in prosperity in the turpentine pine belt. This has been demonstrated for over half a century. The same area in farms alone will not support one-half as many people so well.

The opportunity for prosperity and growth in every community in the turpentine belt of the South is greater than they know. To enjoy it, the fire plague must be stopped.

7—The people of the turpentine pine region are spending hundreds of millions of dollars every year for food, feed and fertilizers, brought in from other sections because of grass fires and forest fires. Stop the fires and the same region will produce all it needs for itself and can also send out enough to bring more money in than is now sent away.

In relatively few years this region must be sending out of the South more money every year to bring in lumber to build houses, barns, fences and so on, than the entire cost of preventing the fires which are bringing this situation about.

What Repairs Are Deductible?

Difference Between Repairs and Replacements and How Deductions Are Allowed for Remaining Costs in Parts Replaced

By M. P. SNOW
Public Accountant and Tax Consultant

RECENTLY a concern in the Middle West saved itself considerable expense and trouble by proper presentation of its claims for repairs. In this instance the taxpayer had not been able to convince the Bureau of Internal Revenue—which is really the tax administration—that these repairs were deductible. However, the case was finally taken to the United States Board of Tax Appeals. Before the Board the facts were carefully presented. After going into the matter at some length, the board ruled that these repairs were deductible.

You will be interested to know that the repair item in this case represented the cost of shoring up and substituting concrete supports for rotting piers to prevent the collapse of a building. Any number of business concerns have the idea that unless a repair is a very small item it is not deductible. They have the impression that anything that represents a considerable outlay of money is by its very nature a replacement—not a repair—and therefore not deductible from income.

In another case decided on by the United States Board of Tax Appeals a little farther back, the cost of certain repairs were disallowed as a deduction because, as the board stated, there was not proper evidence submitted to show that this amount should be allowed as a deduction.

Are you now making repairs or replacements? Have you done so at any time during the year? Or do you expect to do so at any time between now and January 1, 1927?

Money saving information is given in the attached article showing how deductions may be taken for these expenditures.

If in past years you have been required to add the balance of cost left in a demolished part, to the cost of the new part, write in to this magazine and explain what you did. You may be entitled to refund on the basis of certain decisions.

In the meantime bear in mind the information given you in this article as to how to handle your current repairs and replacements.

Surprises have come to quite a number of concerns who have taken large deductions for repairs. Repairs must be made in almost every type of business concern. These repairs, when properly explained, are deductible. On the other hand, if a deduction is simply made without explanation, there is a possibility that it will be either disallowed or that you will have to furnish considerable additional information.

As this story is written, repairs are being made in a great many business concerns. "Patching up" of various assets is taking place in hundreds of companies. Of course, a great many concerns do not make repairs at this time of the year. Some do their "grief work" whenever it becomes plain that these operations may not be safely postponed any longer. Such things as "ailing" machine parts, badly leaking roofs, disabled elevators, wobbly supports, naturally

must be given quick attention. They may not be deferred to any particular time of the year. But a great many concerns set aside a particular time of the year as the convenient and logical time to take care of what you might call **regular** repair jobs.

However, whether you are doing your repairing on the spur of the moment or at a certain time each year, such as, say, the present, you should be careful to handle your expenditures for what they are. In other words, if they are repairs, treat them as expenses. If you expect to have Uncle Sam allow these expenditures as deductions, make a proper memorandum of the character of the work done. Then when the return is made up, explain just what kind of work it was.

If you have any doubt as to the importance of telling the Government the nature of the repairs, you need only to file your tax report and take a deduction without any explanation for some large amount of repairs. The chances are, in my opinion, about ten to one, that you will be asked by the Tax Bureau to explain. And, your explanation may not always be as convincing **after** it has been requested as it is **beforehand.**

Repair or Replacement?

You see there is a very thin line between what the Government calls a repair and what it terms a "replacement." In the "regulations" which are issued by the Tax Unit, quite a bit is said about repairs. The Tax Unit says that the cost of incidental repairs which do not add materially to the value of the property, nor appreciably prolong its life, but which keep it in an ordinarily efficient operating condition, may be deducted as expense. Of course, it is provided that in order for this deduction to be allowable, the plant or property account must not have been increased by the amount of these expenditures.

A replacement is described indirectly as something which arrests deterioration and appreciably prolongs the life of the property. An expenditure for a replacement, according to the Government, should be charged against your depreciation reserve, if you keep such an account. If you do not carry a depreciation reserve account, then the cost of a replacement should be added to the value of your asset on which the replacement occurs.

Examples are rather dangerous as guides when you are trying to illustrate the difference between a repair and a replacement. As I have said, there is a very narrow line between the two items. There are a large number of people who cannot say, without a great deal of study, whether an item is a repair or a replacement. An example which I think illustrates this rather aptly is that of expenditures in connection with work on a roof.

If you merely patch a roof, you do not appreciably prolong the life of a building. On the other hand, suppose you tear off the entire roof and put on a new one. You thereby arrest deterioration, not only of the roof but of the entire building, and you do actually prolong the life of the property.

Sometimes a replacement seems to be more in the nature of a repair, and vice versa, but there are a few expenditures which have been ruled on by the Tax Bureau and which give a rather good idea of the distinction between repairs and replacements. For example, the Tax Unit has ruled that the cost of painting the outside of a building, and papering the inside (this was a business building) was deductible as a repair. In other words, it was an incidental bit of work in connection with the building.

In another case where a new roof was put on a building, the Tax Bureau ruled that it was a capital expenditure—that is—that it was a replacement.

Work done in connection with patching and welding a boiler was also considered to be a replacement.

An amount expended for temporary protection in bracing and strengthening a wall to protect an office building, due to erection of a building on the adjoining property, was ruled to be a repair.

A mine replaced its mules with electric equipment. Of course, this was held to be a replacement, and is simply cited to show how broad a definition may be given to the word "replacement."

The line of distinction between repairs and replacements is seldom easy to see, and the definition set forth by the Government is such a general one that it is difficult for taxpayers to see in a great many instances whether their expenditures in connection with their properties represent one or the other.

Board's Decision on Unextinguished Costs

Now right in this connection and getting away from the matter of repairs, let me call the attention of all who are reading this magazine to a decision made by the United States Board of Tax Appeals, and in which the Tax Bureau concurred, meaning a very great benefit to the thousands of taxpayers who make replacements and alterations in connection with various properties.

Some of you have had experience with the Tax Unit in connection with replaced items. The Bureau has always held that the balance of cost remaining in any replaced item should be added to the cost of the new part. In other words, they have held that the unextinguished or undepreciated cost remaining in a replaced item should be added to the cost of the part which is used to do the replacing.

Now in a number of cases that have come recently before the United States Board of Tax Appeals, it has been held that the "unextinguished cost," as the Board terms it, is not a proper addition to the cost of a new part but should be taken as a deduction in the year the demolition of the old part occurs. In some decisions the Board has even held that the cost of demolishing, or, "wreckage," is a deduction also. However, I am inclined to think that it will

depend on the actual circumstances as to whether the Board will allow the cost of demolition because there are some cases where this is specifically allowed and others where it is not. At any rate, it is clear that any cost remaining in the replaced item is a deduction in the year the replacement occurs.

You do not have to consider this at very great length in order to see how it fits into your own business. Hardly a year goes by but that a concern does some replacing or repairing. If the replacement is such as is described here, that is, where there is an undepreciated balance in the part worn out, it is easy to see that the decisions of the Board permitting a deduction of this balance are invaluable.

Let me make one point clear here. Against the amount which you may deduct as the unextinguished or undepreciated cost, you must apply any salvage or scrap value remaining in the old part.

Augmenting Supply of Foremen

Paper Mills with Others to Benefit by New Movement

By S. K. HARGIS

THAT shortage of trained supervisory aids in paper mills and other heavy industries is frequently acute enough to warrant special study of the problem, is the belief of many executives in the industry. The whole question of the supply of skilled foremen is to the front in the paper industry and plans for an extended survey are under way by the United States Chamber of Commerce with the active aid of the National Association of Foremen.

Personnel managers engaged in the paper mills of the country will have a vital interest in this subject not alone from the standpoint of adequate man power, but also from that of the quality of the supply. Perhaps sufficient attention has not been given this subject of supervisors along with the question of general labor supply, with the result that serious shortages are frequent throughout the field.

The paper mill foreman has become an increasingly important link in the chain of production, which goes beyond the mere responsibility for the day's output; he controls, in a great measure, the labor turnover situation and the attitude of the employee to employer. It is generally felt that more foremen of the better type are desirable. Quoting the Chamber of Commerce Department of Manufacture in this connection:

"The larger employers as usual seem to have appreciated first the need for trained foremen and the training schools and classes existing at present are to a great extent in the larger plants of the country but not exclusively so; for in many of the smaller places, employers have combined or organized and are maintaining and supporting joint classes."

Quantity, Quality Depend on Foremen

No one can deny the power of the direct supervisory subordinates in the paper industry to wield a vast influence both on the quantity and quality of output. The bigger the mill, the greater the need for skilled, intelligent and conscientious foremen.

Curtailment of immigration has not only had some effect upon the supply of paper mill labor but also on the supply of supervisors. The supply of the latter groups by no means always parallels that of the rank and file in the mills.

Personnel managers who have studied conditions in the industry recognize certain facts:

1—The extension of various vocational training facilities in the paper production processes is necessary.

2—Wage adjustments for supervisory work call for closer study.

3—The paper trades will be required to extend present training school movements, especially along co-operative lines.

4—The paper trades unions have a practical end to meet in fostering this principle.

At present, the industry must depend largely upon the following sources for trained supervisors, in the subordinate brackets at least:

1—Y. M. C. A. training schools.

2—Paper mill training groups.

3—Federal Board of Vocational Training in co-operation with the states interested in paper production.

4—Colleges and universities.

Whether the young man employed in the mill as an operative is to look forward to promotion as a reward of merit is a question deeply involved. Hitherto, the industry has not been inclined to depend upon this source to any great extent.

Schooling Is a Necessity

It is believed by many leaders in the paper trades that the best material for supervisors come from the ranks of operatives, providing they are given adequate technical instruction and with ample attention to the human side of the job. In a measure, this side of the matter has suffered neglect. Given a knowledge of the technical side of paper production or individual operations in paper production, the foreman has been largely judged upon a text book knowledge rather than upon his natural adaptability for overseeing. The knowledge of handling opera-

tives in mass is quite as vital and a few of the leading mills have been training young foremen along this line with excellent results.

Personnel managers in the paper trades and independent vocational experts often raise numerous objections to an indiscriminate drawing upon labor in the ranks for supervisory positions, largely on the ground that the viewpoint is wrong and must be almost entirely reversed. The worker in the ranks, it is held, usually comes into authority after a contact that is detrimental in getting the best out of subordinates. Much, of course, depends upon the individual involved.

The question of nationality must of necessity enter into the situation. I have found in the New England field that promotion from the ranks to supervisory positions have not been general. The policy has been rather to draw upon vocational training agencies, largely because of the feeling that mere machine experience is only half of the requirements of the successful foreman. A large number of such promotions proved that the majority of the young men, so promoted, even after technical training, reverted back to the machine in the course of time either through preference or through necessity.

United States Aids

It is claimed that the United States Government appropriated a subsidy of over $6,000,000.00 for vocational training in 1925, a large portion of which went into the schooling of foremen for the leading industries. This sum was spent largely in co-operation with state agencies.

Anyone who has examined personnel features of the paper trades realizes that the variation in the production curve among different supervisory heads is often surprising, and that this may be traced in a large measure to qualifications other than mere technical skill.

That the handling of groups of operatives in any single process in the paper mill is often more successful where less technical but more personal strength exists, is beyond any doubt. But this power to get the utmost in production out of an average group may be to some degree codified and taught is certain. Yet vocational training organizations have paid only scant attention to it in the past.

The engagement of specialists by the larger mills is considered by many to fall short of present needs. On the other hand, ordinary personnel managers are seldom equipped to aid in the supply of skilled foremen. Their time and energies are largely consumed in keeping up the supply of operatives and in holding down the rate of turnover.

It is probable that a further airing of the facts, beyond the preliminary plans of the Chamber of Commerce, is desirable.

The paper trades are drawing only to a limited extent upon college trained foremen and supervisors, largely because the supply has been so small as to be negligible, especially within those states where paper production is heaviest.

It is believed that the supply of skilled and intelligent foremen—younger men—must come from within the industry itself.

Cellulose Fibrillae

IN DISCUSSIONS on the hydration of cellulose with reference to the paper on the subject as read by James Strachan before the Technical Section of the British Paper Makers' Association, and his original article in the May issue of THE PAPER INDUSTRY the word fibrillæ was much used. Some of us have wondered why the author and those who discussed his paper did not use the English word **fibril** and its plural **fibrils** instead of the Latin words fibrilla and fibrillæ and an expression of this was conveyed to Mr. Strachan who has been kind enough to supply the following note on the subject:

"**Fibrilla** (plural, **fibrillæ**) is the diminutive of **fibra**, a thread, and means a little thread (Latin). This word has been in use in histology among English microscopists for at least half a century, so it is by no means a new word. It was first used to describe the minute fibers from which certain animal tissues, such as muscular fiber, are built up.

"Although the English word **fibril** (plural **fibrils**) has a similar meaning, I prefer to use the word fibrilla from the point of view of usage as a microscopist.

"All cellulose fibers are built up in layers concentric with the internal canal. Each layer is composed of a regular network of fibrillæ which may be regarded as chains of micellæ or polymolecular units of cellulose. The question as to whether these minute fibrillæ are crystalline or not, I have gone into in my paper in the 'Hydration of Cellulose.' My opinion is that although such units may build up crystals, their arrangement in a cellulose fiber does not constitute a crystalline growth and that the interference phenomena observed on cellulose, both with ordinary light and X-rays, which have led many investigators to regard cellulose as crystalline, may be explained by diffraction effects in the layers of crossing fibrillæ.

"From the practical point of view, it is sufficient to grasp the point that every cellulose fiber has this minute structure and that beating destroys the structure to some extent by opening out a close network of fibrillæ (without any loose ends) into a broken network (with a multitude of free ends), having a large specific surface."

Where a great many steam traps are used, it is a paying investment to have one or more men make periodic and frequent inspections for the purpose of detecting leakage or improper operation.

Editorial Comment

By WILLIAM SIBLEY

Throwing Good Machinery Away

ONE of the principal reasons why the United States is so far in the forefront of all other nations in the matter of production and wealth is because we have been perfectly willing to throw good machinery onto the junk pile. Not that industrialists find particular pleasure in junking expensive and quite efficient machinery, but in general they have come to realize the value of increased efficiency, with the result that regardless of how good may be a piece of equipment or how efficient some particular practice, that equipment or practice is abandoned just the moment a still more efficient medium has been found. This ready acceptance of the new and better very largely accounts for our exceptional industrial progress.

The flail would doubtless be as efficient in threshing the wheat grown today as the wheat of one hundred years ago. The sickle and the scythe still cut with the same degree of efficiency and speed, but no 1926 farmer could eke out an existence with these obsolete implements because all other farmers have progressed to the six-foot mower and the power thresher. The lathe that turned out the machinery parts twenty years ago could just as well turn out the same parts today and probably continue to do so for another twenty years, but the operator could not hope to successfully compete with the machine shops equipped with 1926 lathes. Probably the mangle of five years ago would iron flat work as speedily and efficiently today as when it was first installed, but in comparison with the amount and quality of work turned out by latter mangles it is a most expensive machine. The old horse and buggy will go as far and as fast today as it would thirty years ago, but no sales manager of today would think of choosing the horse-drawn phaeton in preference to the automobile for his road men.

During the past ten or fifteen years we have heard it said "they don't make things as well now-a-days as they did fifty years ago." In isolated cases such statements may be true, but it is our opinion that for American products in general it is absolutely unfounded. Producing things at high speed or in large volume does not necessarily indicate that there has been a sacrifice in quality. We can point to scores of products that are of far higher quality than when first produced—and which are being sold at a much lower price. The increase in quality and the decrease in cots have been made possible by the willingness of the manufacturer to discard machinery before it was worn out—to replace otherwise good machinery and methods with equipment that was better. There is no doubt that the $7.50 camera of today will produce a better picture at a lower cost than the $75 camera of twenty years ago. In our mind it is the constantly recurring necessity for throwing away otherwise good equipment in order that still better equipment might be used that gives rise to the superficial thought that things are not made as well today as formerly.

The major problem constantly confronting executives is: How to increase production and cut producing costs. The answer, for the most part, lies in the application of machines—machines, and yet more machines. The principle of automatization, which is the substitution of machines for hand labor, is quite universally recognized today. Now comes the necessity for learning the value of increased efficiency—the true value of machine replacement. Every progressive executive is forever asking himself the question: "How much longer can I afford to use my present equipment?" The answer is: Only so long as there is nothing more efficient to be had.

Why Commercial Vision is Imperative

VISION is the unimpaired recognition of the future. Never has the business man stood in greater need of vision, for never in history has any nation progressed with greater speed than ours. So rapidly are we traveling that what was true yesterday is untrue today and dangerous tomorrow. Dangerous because any calculation of the future based on past experience is more than likely to be unreliable and misleading. A few short years ago we could profitably employ statistics and measurements of business that were one or two years old. Today such figures no longer serve because of the radical changes that can be effected in so short a period as one year.

The rapidity with which we are progressing is shown in countless ways. Two and one-half years ago our rayon industry produced goods valued at only 59 million dollars. Today the annual production of rayon products totals a value in excess of 125 millions, and this 1925 figure contrasts itself with the $4,597,000 which was the value of the 1914 production.

Perhaps the reader's reaction to the above paragraph is that an industry of only 125 million dollars should cause no stir in one's imagination, and cer-

—— on Timely Subjects

tainly none in the commercial world. Perhaps not. The rayon industry is doubtless below the 100 mark in proportionate industrial classification. But 27 years ago there were only 17 industries in the country whose net value exceeded 100 millions, only 39 totaled over $50,000,000, with only one in the billion-dollar class. Today there are 114 industries rated above 100 millions and 19 with value exceeding one billion.

Perhaps the greatest and most rapid single increase ever enjoyed by any industry has been experienced by radio. In 1923 (2½ years ago) the industry is reported to have been valued at $44,176,000. Today its value is considerably in excess of $650,000,000—a total that contrasts itself with the 1914 figure, which was $792,000.

Aircraft manufacture formed an industry that, back in 1914, was valued at $789,000. Largely due to the war, this valuation increased rapidly, but it is significant that the impetus supplied by the war has failed to recede. On the contrary the industry as a whole has nearly tripled itself in the three years of 1923 to 1926.

So much has been written and said of the progressive strides made by the automotive industry that the figures, now trite, will not be repeated here. But few realize, however, the far-reaching effect the development of the motor vehicle has had on other industries. The perfection of transportation and the development of electricity have in themselves done more to lift the level of industrial production than any other six instrumentalities. By reason of its advance, coupled with the development of cheap electrical energy, 18 industries have been elevated to the billion-dollar class and literally scores have been lifted above the 100-million mark.

The most illuminating and valuable thing about such a recount as this is the forced realization that in short spaces of time our most inconspicuous industries can rise to full importance. What will be our major industry in 1950? In ten years? Such a question could be answered only by conjecture—and conjecture, traveling at our present speed, is exceedingly dangerous. We need more up-to-date statistics and trend figures. Only by these can we hope to gain unimpaired recognition of the future. In this time of mechanical genius and scientific research our accelerated speed rives rise to thoughts of stability. Without vision there can be only accidental and probably temporary security.

* * *

The merchant who is too busy to be polite won't be nearly so busy after a while!

Consensus of Opinion on Business Conditions

TO PRESENT the views of several of the major economists on current and immediate future business conditions, there is subjoined a digest of individual opinion.

Babson:

Although general business is declining somewhat, the outlook is for more or less stabilized conditions. Better stock buying opportunities should occur somewhat later in the year.

Brookmire:

It is probable that business will decline throughout the summer, reaching its low point by the beginning of fall. Substantial declines in volume of production will be witnessed during the coming months.

Alexander Hamilton:

While the present trend is downward, there is little to be seen in the coming months to cause serious alarm. The general retail trade outlook for the summer is favorable, the farm trade depending largely upon farm purchasing power.

Bankers Economic:

Foreign trade shows improvement, largely as a result of larger cotton exports and lower value of rubber imports. Exceptionally large car loadings indicate that distribution and trade are continuing at satisfactory levels.

Gibson:

The general business outlook is reasonably good with neither a boom nor a depression probable. The physical volume of production during the next few months should be high.

Harvard Economic:

A renewed expansion of general business will not occur until after prices are stabilized and production is contracted. Current business, as measured by bank deposits, car loadings, etc., continue at a relatively high level.

Poor's:

It is not possible to forecast the length and breadth of the present business recession. Long pull purchases in the stock market do not seem advisable.

Moody's:

Business is going through a period of readjustment and the trend is still downward. Agriculture is less important to financial markets than before the war.

The Paper House Employees' Organ

A Consideration of the Proper Function of the Mill and House Magazine

By JACK LAMBERT

PAPER mill and paper dealer executives are not necessarily publishers by instinct. Yet they have as an industrial group, widely contributed to the development of the employees' magazine along with leaders in other industries.

The number of house organs in the paper trade probably exceeds that in any other at present, the best examples are found in it.

I am speaking here of the strictly employees' magazine and not of the ordinary business bulletin.

There have been some "mortalities" in paper mill and paper house organs as in other trades. The reasons are not always the same but they often are. Generally speaking, the number of true employees' magazines in this country is on the increase. There are over 2,500 which may be termed magazines with truth.

The paper industry by reason of the character of its personnel of the rank and file, requires good house magazines but anyone who believes it is an easy matter to balance the editorial contents of such a publication will soon learn differently when once he is in the editor's chair.

In many cases in the paper and other trades, magazines have failed because of improper viewpoint, lack of definite policy carefully carried out which often has tended to alienate the very people it is intended to win.

A single issue of a paper house magazine may serve excellently; but it is in successive issues that difficulties arrive.

The magazine edited for a given group employed in a single paper mill or paper house is in a somewhat different position regarding its readers than is the general magazine.

Company Magazine Stands Alone

If the paper house executive wishes to utilize his magazine for a certain definite purpose of policy, he will find it necessary to proceed cautiously.

The most successful have striven first of all to be interesting and readable. It is easy enough to get "glancers" among non-reading groups; but what the house organ needs is **readers.** Matters of company policy have to be closely linked with this interest, and adroitness must be used if the prime feature and purpose of the magazine is to be achieved. Otherwise it may do more harm than good.

Employees in the mill and jobbing house offer a somewhat mixed group of people, divided to a great extent in sympathies and interests, habits and reactions. A general appeal must be arrived at and from several angles as:

a—Plain, readable English.

b—Individual welfare without a saturation of paternalism.

c—Broad assortment of general news.

d—Absolute impartiality as to department, race or status.

e—Brevity in treatment of everything.

f—Free utility of illustration.

g—Sparing use of high brow industrial or sociological philosophy, usually over the heads of 90 per cent of the readers.

In order to achieve any underlying result whatever, the mill or paper house will first have to make the magazine **interesting.** If not actually read, it is an impotent thing and a waste of money.

What then will the employees of the paper mill or paper house read? They will read:

1—Brief news personals, from all departments.

2—Editorials if purely local in application.

3—Pictures of **persons** if of the kodak variety.

4—Accounts of actual events on the property.

5—Articles affecting wages or hours if clearly presented.

Small Magazine Is Best

"Small," of course, is a relative term. But the most successful house organs in the trade are modest and usually small in their format.

Color covers and ornate makeup is lost in such cases. Only good paper may be excused!

It is the "spirit" of the editorial appeal in general —read between the lines—that counts most. Every house organ editor isn't gifted with this flair but many of them are in the paper trade especially.

One of the commonest faults of house organs is their failure to get a true balance in news gathering. Every department in the mill or the house isn't given the same space and attention. To assure this isn't so simple as the executive may believe it to be. Every house organ editor in the paper trade knows that certain departments produce more and better news than others—that greater news gathering co-operation is secured from some departments than others and this makes an uneven balance of contents certain in almost every issue.

Nothing is quite so injurious to such an enterprise and nothing quite so hard to prevent. It destroys the very spirit of democracy and inspiration which the magazine is designed to foster. You may ask

assiduously for news from every department but how often do you get it?

However your news getting efforts may be, if you don't get it there is apt to be resentment among the people who fail to aid you though it isn't your fault.

The editor of a series of house organs told the writer last winter: "The successful employees' magazine should be edited from the bottom up and not from the top down. That effect, at least, should be achieved. A lot of "talks by the big boss," giving golden nuggets of wisdom and philosophy will not travel nearly so far as the picture of Foreman Jones' new baby. The sayings of the factory wiseacre working every day on a machine or in the shipping room and known to every employee by his first name are worth more as an editorial feature than all the wisdom of the vice-president."

Now and then the paper trade has passed along through its house journals instructive articles and data on manufacturing and paper mechandising principles, but it has been generally found that this sort of thing doesn't go so well; the worker appears to want diversion in his house magazine and not instruction.

He sees enough of pulp all week; he wants to get a cross section view of "life in the mill" day by day when he opens his plant paper in the comfort of his day-on day of issue or in the discomfort of his bus or trolley ride at nght.

After all, the employees' magazine is in competition with the newsstand. Paper house employees have as little and as much time for reading as any other industrial operatives; if they average an hour in 24, the house organ has to bid for a part of it, say what you will.

And if it isn't interesting, it won't be read.

The basic policy of any employees' magazine can be summed up briefly and the editor should keep this summation before him at all times and make his stuff fit it.

I give here a few statements of house organ policy which have come to my attention recently, giving them either literally or in their meaning:

"To stress the importance of the worker in his daily activities to the success of the plant as a whole."

* * *

"To bind the interests of every person in the shop into a harmonious whole."

* * *

"To enhance the human side of the factory's daily grind and to leaven honest labor with understanding."

"Live and learn, almost get killed and learn—and learn faster." While Charles Dickens wrote this sentence many years ago, there are people today who prefer to get their own bitter experiences rather than to profit by what others have learned, observes David Van Schaack, Vice-President of the National Safety Council.

Batch Bleaching Versus the Continuous System

By ROBERT M. BOEHM
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In presenting this article to our readers, we do so with the expectation that the comparisons drawn by the author will meet with some differences of opinion and discussion is therefore invited.

IN THIS comparison of bleaching by batches as opposed to the continuous method, the data will be taken entirely from my own experience in the actual operation and control of both systems. The stock bleached varied from hard kraft to a high grade Mitscherlich waxing and creping sheet. Although it is hard to get comparative figures on the two methods since few mills are equipped to use both, the results obtained have convinced me that bleaching in batches is superior to continuous bleaching especially as regards uniformity of stock produced and bleach consumed.

In order to more readily point out the differences between the two systems, it will perhaps be well to give a brief description of the more modern engines of both types. The continuous system consists, usually of four units, each having a capactiy of about 2½ tons at a consistency of 10 per cent A. D. Each unit is a vertical cylinder equipped with a worm which takes the stock at the bottom and forces it to the top, from whence it again returns to the bottom by the action of gravity. Connecting these units is a long, horizontal worm conveyor which takes a part of the stock from the top of one unit and carries it to the top of the next, where the mixing is resumed. After the stock rises to the top in the last unit the worm carries it directly to the pump box or washers.

The leading engine of the batch type is the improved Biggs rotary. This consists of a fourteen-foot sphere mounted on trunnions and equipped with a set of baffles specially designed to give the stock a thorough mixing. These baffles are attached directly to the shell and as the rotary makes one revolution in three to four minutes, the stock is mixed with a slow, easy motion, eliminating all worming action. Samples are taken through a valve designed for the purpose. The rotary is dumped by removing the manhole plate and turning over once, while water enters through the trunnions.

Both of the above systems are of the high density class, that is, the worm type handles stock up to 15 per cent consistency and the rotary handles stock up to 30 per cent consistency.

The advantages of the batch system over the continuous are:

1—Production of a more uniform stock.

2—Lower consumption of bleach liquor.

3—System more easily handled.

4—Exact control of system possible.

In the batch system, samples of the stock are taken at intervals near the end of the bleach and when the pulp has attained the desired color the batch is dumped and sent on to the washers. The idea of putting in a certain amount of bleach liquor and allowing it to exhaust itself is, of course, wrong and wasteful. No two cooks will bleach exactly the same and if it is intended to dump them after a definite length of time, it is obvious that the pulp will vary greatly in color and quality. Yet this is exactly what is done in the continuous system. The worms carry the pulp to the washers, regardless of whether the pulp is up to color or over bleached.

At a consistency of 15 per cent A. D., the capacity of one unit in the continuous system is about 3 tons. When using four units, the capacity of the system is therefore 14 tons. Bleaching 50 tons in 24 hours means that the stock is in the system for about six hours. Actually, however, some of the stock goes through in two hours while some remains in the system for ten or twelve hours. This is due to the fact that the horizontal worm conveyor connecting the units will carry over whatever stock it comes in contact with regardless of whether it has made the trip down to the bottom once, or twenty times. This leaves some of the stock to revolve in one unit for a long period of time while other stock is removed and carried through the system very quickly. This has exactly the same effect as taking a number of different cooks, adding the same amount of liquor to each and indiscriminately bleaching some two hours and some ten hours—and expecting to obtain uniform pulp. It just can't be done. The continuous system must be so designed that the stock which travels through fastest will be bleached by the time it leaves. The stock which remains in the system will be over-bleached or, if there is no excess bleach present, it will start "going back" in color and more bleach must be added in the last unit to bring up the color again. This increases the consumption of bleach liquor, and, since it is necessary to heat up the stock in the worm system, hastens the formation of oyx-cellulose, thereby greatly lowering the quality and yield of the pulp.

The Difference in Cooks

Let us now consider something that happens in the best regulated pulp mills. For some reason one of the digesters blows a hard or partially raw cook. In the batch system this is discovered as soon as the first sample is taken and more liquor is added to bring the pulp up to the desired color. The cook before and the cook after are treated in the usual way, the hard cook having no effect on them.

Now consider the effect in the continuous system. The four units are entirely filled with easy bleaching stock. The hard cook enters the first unit with an insufficient amount of liquor. It is distributed throughout the unit and part goes to the second. Here is where more bleach liquor is usually added. Now each of the first two units contain a mixture of hard, unbleached stock and soft, partially bleached stock. An excess of liquor is present which will tend to partially bleach the hard stock while it over-bleaches the soft stock. After a time, all the units will have a mixture of the two stocks, one partially bleached and one totally bleached. An excess of liquor must be present to complete the bleaching of the hard stock, but, as we know, it will also attack the soft stock, over-bleaching it, and, in warm bleaching systems, forming oyx-cellulose. This is wasteful as regards bleach and deteriorates the fiber.

A further disadvantage of the continuous system is that it is usually hard to get accurate figures on the amount of stock and liquor used. In the batch system these can be measured exactly, but since the continuous system has the stock and liquor running in constantly, control is largely guesswork. The liquor may be measured by means of accurate flow-meters or a very sensitive depth gauge, but the stock entering must be estimated. It is possible, of course, to strike an average over a period of time, but it is practically impossible to determine exactly the amount of liquor used for a certain cook. In a mill which bleaches a large percentage of their pulp, this is an important factor and the inability to learn the bleachability of different cooks makes the process less efficient than by using the batch method, where each cook is separately and according to its characteristics, and where an exact control of the entire process is possible.

Is Smoke Invisible?

PAPER mill engineers who have smoke problems to contend with will be interested in knowing that the smoke problem of the city of Pittsburgh is still unsolved, although the visibility of its smoke has been reduced as much as 80 per cent in recent years. That is, according to smoke charts, only about 20 per cent as much smoke can be seen as in the old days when Pittsburgh was considered the "Smokiest city in the United States." The present difficulty is this: Experts find that although there is apparently less smoke in the air, the amount of solid matter that goes up the chimney is greater than it was in the old days. In 1912, the amount of solid matter was 85 tons per square mile per month, whereas now it is about 120 tons per square mile per month. It is believed that this is due to the installation of forced draft apparatus which blows more solids up the chimney but makes the smoke less visible. Ordinances will probably be passed specifying the amount of solid matter as well as the visibility. Thus the smoke question, too, becomes more complicated.—Schaphorst.

Joint Meeting of Superintendents

Connecticut Valley and Northeastern Divisions of Superintendents' Association Hold Interesting Session at Holyoke--- Rosin Sizing Discussed

SUCCESSFUL beyond expectations was the joint meeting of the Northeastern and Connecticut Valley divisions of the American Pulp and Paper Mill Superintendents' Association at Holyoke, Mass., on Saturday, June 26. Members and visitors began to arrive on Friday and upwards of 100 superintendents were registered when the proceedings started on Saturday morning with a visit to the plant of the Paper Makers' Chemical Co., who were hosts to the visitors. Automobiles were provided by the local committee, representatives of nearly all the mills in Holyoke and vicinity, headed by Charles A. Tifft, of the Chemical Paper Manufacturing Co., who was assiduous in his efforts to provide for the comfort and entertainment of the host of visitors which included an unusually large number of the wives and daughters of members. He and John H. White, ex-mayor of Holyoke, perpetual toastmaster of the association, together with William B. Clements, of the American Writing Paper Co., won the plaudits of the visitors for their unremitting attentions.

Rosin Size Plant Inspected

At the Paper Makers' Chemical Co., the visitors were shown over the plant by L. A. Thompson, E. J. Johnstone, A. F. Brunell and H. M. Eastman. Having been unexpectedly called away, Ralph M. Snell, resident manager of the company, was unable to receive the visitors and many who had expected to greet him were disappointed. Every part of the plant was inspected and the various operations connected with the manufacture of rosin size, from the breaking up of the rosin and filling of huge digesters in which it was melted and saponified with soda ash and water, to the filtering of the resulting size through massive Shriver filter presses and the final testing of the product in the well equipped laboratories of the company were witnessed by an interested crowd of visitors. Note was taken of the great variety and immensity of the operations carried on at this plant. The rosin size is delivered in iron drums of 1,000 lb. net capacity, but the Paper Makers' Chemical Co. are also producers of turpentine and distributors on a large scale of sodium silicate, caustic soda, linseed oil and denatured alcohol, enormous supplies of which are kept on hand for the prospective needs of customers, thus entailing great storage capacity which is a feature of the new plant of the Paper Makers' Chemical Co. at Willimansett.

Visits Paid to Local Mills

From the rosin size factory the visitors were taken in turn to the Riverside Paper Co. Division of the American Writing Paper Co., the Chemical Paper Manufacturing Co., The Linden Paper Co. Division of the American Writing Paper Co., Parsons Paper Co., Crocker Manufacturing Co. Division of the American Writing Paper Co. and the Department of Technical Control of the American Writing Paper Co. The latter part of the program had to be curtailed to some extent on account of weather conditions, a rainstorm having impeded the movements of the visitors from mill to mill.

About every grade of fine paper and boards are made in Holyoke, the display of finished papetries, bonds, ledgers and similar papers in the finishing rooms and storerooms of the Riverside division of the A. W. P. and the mill of the Parsons Paper Co. being particularly impressive. Many of the superintendents lingered at the Parsons Paper Co. mill for an inspection of a new machine of Rice, Barton & Fales construction which was operating with steady precision on ledger paper in a way to excite the admiration of some keen judges of excellence in machine operation.

Machine with Enclosed Ball Bearings

What especially attracted the attention of the visitors in looking over this machine were the bearings on the Fourdrinier part. As the shaking frame, resting and rocking on pins, has the bearings all enclosed it is impossible for water to reach them. Chairman Mooney called the attention of the writer to the location of the table rolls on top of the rails, carried in ball bearings and so designed that the rolls can be taken out quickly. The breast roll and felt rolls, also on ball bearings, are arranged for satisfactory lubrication. The stretchers, with frames of cast iron, very rigid and carefully machined, makes it possible to operate them with the minimum of effort. The bearings for the main press rolls and all the

Group of superintendents and visitors at the joint meeting of the Northeastern and Connecticut Valley Divisions of the Superintendents' Association, Holyoke, Mass., June 26, 1926

dryers are of the self-aligning type, those on the press part being watertight. The self-aligning feature on these bearings is certainly a good one.

BUSINESS MEETING

A business meeting was called for the afternoon at the Hotel Monotuck, which was attended by the superintendents, while the ladies of the party were treated to an automobile drive to Mount Tom, one of the resorts near Holyoke, from which a glorious view can be obtained over a great expanse of country.

Welcomed by the Mayor

The meeting was called to order by Charles N. Mooney, chairman of the Connecticut Valley Division, who greeted his fellow superintendents, expressing the pleasure it gave him to preside over such a representative gathering. He then introduced the Honorable Gregory J. Scanlon, mayor of Holyoke, who made an eloquent speech of welcome, in the course of which he alluded to the presence of an ex-mayor of Holyoke, John H. White, who during his term of office had rendered great services to the people of Holyoke. Mayor Scanlon extended the freedom of the city to the visitors, saying he had a warm place in his heart for papermakers as in his early life he had worked as a papermaker in the Linden Division of the American Writing Paper Co.

The minutes of the previous meeting held at Garde Hotel, New Haven, Conn., as read by Secretary Charles A. Tifft, were approved and this was followed by the reading of a telegram from Killey E. Terry, of the S. D. Warren Co., Cumberland Mills, Me., who is chairman of the Northeastern Division of the Superintendents' Association, which expressed regret at his inability to attend.

Chairman Mooney then turned the meeting over to the direction of Edward J. Johnstone, of the Paper Makers' Chemical Co., who led a symposium on rosin and rosin sizing illustrated with moving pictures, showing the tapping of trees and the collection of rosin and turpentine from the wood.

Following a historical and economic study of rosin production and the use of rosin size by Mr. Johnstone, L. A. Thompson gave an account of the origin and development of the Paper Makers' Chemical Co., together with a description of the methods employed by the company in overcoming sizing difficulties in papermaking operations. He in turn was followed by H. M. Eastman, who discussed some of the chemical and physical factors affecting the sizing process.

"Naval Stores" Now a Misnomer

The manufacture of rosin, a product of the long-leaf pine, **Pinus palustris**, comes under the designation Naval Stores Industry, which, Mr. Johnstone pointed out, was a misnomer dating back to the time when turpentine, tar and pitch were used extensively for caulking sailing vessels, for the navies principally. In those days the rosin was thrown away, whereas today rosin, the by-product, is the greatest source of revenue.

Rosin was first produced in North Carolina but the largest producer today is Florida and the movement is now westward owing to the cutting down of the forests of the Atlantic States for lumber purposes. The naval stores or rosin belt runs through the States of North and South Carolina, Georgia, Florida, Alabama, Louisiana, Mississippi and a portion of Texas.

Opening a Turpentine Farm

Mr. Johnstone described the method of opening a turpentine orchard or farm for the division of the timber into crops, these consisting of 10,500 cups or boxes which are subdivided into five drifts of 2,100 each, a standard statistical crop. The term box was, he said, applied to the drum receptable cut into the base of the tree, actually an inner cup measuring about 4" x 10" x 7". The box system has been practically displaced by the cup system, which takes many forms, the simplest being the insertion into the tree of a crescent strip of metal known as an apron from which is suspended a clay cup of indefinite shape having an average capacity of 1 quart of gum. The tree is scarified to produce a flow of gum which is carried over the apron into the cup. The first year's boxes or cups are known as Virgin, the second Yearling and the third and succeeding years, if any, as Buck or Pulling boxes. The working period is limited to two or three years.

Virgin boxes give the larger proportion of turpentine and pale rosin, the output lessening with each year of operation. It takes two or four weeks to fill a quart cup and the flow is greatest in warm weather, ceasing altogether in cold weather.

Collecting the Gum

Mr. Johnstone gave a full and interesting account of the technical operations of chipping and dipping and these were further illustrated later by motion pictures. The distillation of turpentine from the gum to the time it is barreled for shipment was explained. The residue after distillation is rosin in a molten state which is run into metal or wooden vats after a screening process to remove any chips, straw and dirt that may have escaped the skinning. The clear rosin is dipped with a long-handled dipper and poured into barrels to cool and harden.

Grading the Rosin

Of the fourteen grades of rosin, W.W., W.G., H.M., K, I, H, G, F, E, D, C, B, A, W.W. or water white is the palest and best grade, being transparent; the grades run down the alphabet to A which is opaque. The grades are determined by official standards furnished by the Bureau of Chemistry of the United States Department of Agriculture, the grade being stenciled on the barrel by a government inspector who also checks the weighing. The price of rosin is based on equivalents of 280 lb., one-eighth of an English ton. Prices fluctuate widely. Within the past five years, rosin has sold as low as $3.30 and as high as $15.62 for the lowest grade, and other grades in the same proportion. One of the largest consumers of rosin is the manufacturer of Tanglefoot Sticky Fly Paper. The manufacturers of soaps, like Lux, are also heavy consumers and it also goes into the composition of printing ink, oil cloth, linoleum and sealing wax, though soapmakers and size manufacturers are the two heaviest consumers.

The annual production of rosin amounts to 3,700,000 barrels (280 lb.), half of which is exported. The Paper Makers' Chemical Co. uses one-twenty-fifth of the entire output, or 150,000 barrels per annum.

At the close of the Civil War the annual output was valued $3,500,000, and today it is $50,000,000.

Tree Lasts Four Years

In regard to the life of a tree yielding turpentine and rosin, Mr. Johnstone said that in the United States the limit of profitable operation was four years, whereas in France one tree is reported to have survived 200 years. He said that although the French methods of cupping were not altogether applicable to conditions in the United States, some of the French methods have been adopted and conditions are expected to improve. It has been estimated by chemists that with new and improved methods a saving of $10,000,000 was possible but it is difficult to persuade southern operators that such savings are possible.

When Rosin Was First Used

The use of rosin size in papermaking originated in Germany in 1806. Animal glue was used by the Dutch at an earlier date.

Origin of Paper Makers' Chemical Company

L. A. Thompson followed Mr. Johnstone with an account of the origin and development of the Paper Makers' Chemical Co. John Knight, its first president, was a native of England, where he got his education and early training in papermaking. He was one of the first to make clay coated papers in the Sankey Paper Mills at Newton-Le-Willows, Lancashire, England. He came to the United States and located in Springfield, Mass., in 1887, where he engaged in the sale of English china clay and other mill supplies. He was widely known and respected by the entire paper trade of the country until his retirement from active business in 1907. He continued as president of the Paper Makers' Chemical Co. until his death in 1920.

The founding and successful establishment of the business is credited to C. H. Knight, now president of the company. He conceived the idea of establishing an organization for research and service that would allow him to manufacture size in the different papermaking centers on a large scale, and associated himself with others from time to time, gathering around him such worthy men as C. K. Williams, George Noble,

Ralph M. Snell and W. J. Lawrence. Rosin refineries were started at Jacksonville, Pensacola and Savannah, the three principal naval stores ports of the world.

History of Rosin Sizing

Delving into the history of rosin sizing, Mr. Thompson mentioned Ilig's discovery of the saponification of rosin in 1806 and its addition to pulp in the beater to produce a sized sheet equal to that made with gelatin. The new process of rosin sizing was slow of adoption by the English because the paper mill foremen knew they would lose certain revenues derived from the sale of fats and bones, after the extraction of the glue. It began to take hold, however, about the year 1840. The introduction of rosin as a sizing agent in the United States is practically within the memory of older papermakers. Joseph Krah, a German papermaker who immigrated to Baltimore about 1830, is credited with being the first to use the process here. The story is told that his services were secured by a Mr. Garfield, who operated the Mountain Mills in Lee, Mass., then known as "Old Hickory Mill." For a long time the method of sizing of rosin was maintained as a strict monopoly at this mill.

Processes and Problems

Following this dip into history, Mr. Thompson gave an informing account of the processes employed on a commercial scale by the Paper Makers' Chemical Co., and touched on some of the problems which were submitted by mills, the following being excerpts:

"At one mill they were making a sheet of cheap writing paper, and reported it slack sized on one side. We found they were using a large amount of filler, and together with free stock, allowed the filler to settle to the wire side of the sheet. The filler on examination showed a large amount of acid, which reacted with the size and made it poorly sized on one side—a change of filler and the trouble stopped.

"A mill making orange colored cover paper complained of slack sized sheets. It was found that an excess of alum was needed as a mordant. They had not been using enough alum to precipitate the size and set the color.

"A mill making a light weight catalogue paper of good quality complained of size specks. It was found that the stuff pump was pounding on the seat so hard that it made little specks of crushed stock or lumps. These going through the calenders crushed out transparent.

"In making a high grade manila rope paper a mill complained of slack sizing. It was found that the paper was full of little white specks, afterwards found to be lime, which had not been washed out after boiling. This lime would precipitate with the size in white specks, and leave the paper poorly sized. Using alum first helped, but properly washing the furnish did away with the trouble.

"Foam and slime spots are sometimes caused by insufficient use of fresh water. In a closed circuit clay and other matter will cause some trouble. We had trouble at a book mill where such a system was used.

"A mill making kraft complained that they were getting size specks on their fourdrinier wire which caused holes in the light weight sheet they were making. Investigation showed that these specks on heating had a petroleum smell and it was finally located in the water they were using. The specks came from the refuse of a gas plant just above the paper mill and sewering into the same stream. This mill put in a filter which stopped the trouble.

"A mill making tissue on a fourdrinier machine complained of size specks on the wire which caused holes in the paper. It was found that this mill was not cooking wood with strong enough liquor to get out the pitch and specks of it could be found right in the pulp. On the wire it formed flattened, black balls and would even form inside the dandy roll and on rolls under wire and could be picked off and chewed like chewing gum. Properly cooking their wood eliminated all this trouble.

"A mill making magazine paper complained of size specks in their sheet. The specks were small and transparent and when they were pressed hard on a hot iron, they spread out or ran, showing them to be a wax, likely paraffin, in old papers they were using.

"A mill making card index complained of size specks, and it was found they had new help on their beater, and to hurry up the work they put the size and alum into the beaters simultaneously. Size and alum should be used as far apart as possible and the one used last be well diluted. A mill making cheap bonds complained of size specks. It was found that the mill mixed the size in a barrel and heated the water to the boiling point in the same barrel. Of course, there was always a little size left in the barrel which would start a precipitate, for as soon as the new size was added it curdled and stopped up the strainers. Even after being strained into the stock, specks would form. Water should always be heated in separate tanks from the one in which it is mixed, and at a temperature not over 140° Fahr.

"A mill making patent coated board complained of size specks. Investigation showed that they had shut down over Sunday with a large amount of stuff in the chests. Fearing that their sheets would not be properly sized on Monday morning they put directly into the chest two pails of thick size. The size should have been diluted and poured slowly into the chest during agitation, the alum being added last.

"A mill making hanging paper complained of slack sized paper and foam. Investigation showed that the groundwood had soured. The size supplied by us contained about 35 per cent free rosin. It was impossible to keep the sheet sized; it foamed so that it ran off both sides of the machine like lather, the felts and jackets being sticky with rosin. The only way which the trouble could be overcome was the use of a generous amount of soda ash in the beater to neutralize the stock before adding the size."

Questions were invited by the chair and Mr. Sullivan, of the American Writing Paper Co., asked if the same kind of size could be used with soft water as with hard water without difference as regards the free rosin. He was told that the company did not advise the use of high free rosin size with hard water.

Praise from the National President

Before proceeding with the paper on Sizing Factors by H. N. Eastman, Chairman Mooney called on Fred J. Rooney, president of the general association, who made a short talk giving his impressions of the mill visitations earlier in the day. He said he was greatly impressed with the evidences of order, neatness and cleanliness that prevailed in all the plants visited, speaking particularly of the Crocker mill over which Ed. J. McDonnell and Mr. Gerrity had supervision. He also spoke of the attractive conditions in the mill of the Parsons Paper Co. He said he was sorry that more men from Holyoke had not attended the Detroit convention. One of the constructive pieces of work put through at Detroit was the formation of a Practical Problems Committee. The chairmanship of this committee was still vacant as more than usual care was being taken in the choice of a chairman. He appealed for co-operation and team work on the part of all present. The association was bigger than any individual connected with it. He as president might not be liked by some members but he asked them not to mind him and think of the good of the association.

Vice President Benjamin T. Larrabee also spoke. He said it was his third visit to Holyoke and he had enjoyed every minute of the time spent.

Following the paper by H. M. Eastman on the factors of operation affecting the sizing process, a three-reel picture of woods operations and factory and laboratory views was thrown on the screen by J. E. Snell, accompanied with illustrative comment. The pictures were greatly enjoyed, many of the members having had no previous conception of how rosin was obtained and treated to make rosin sizing. The meeting was then adjourned to give the members time to prepare for the banquet in the evening.

THE BANQUET

Upwards of 320 members and guests attended the banquet in the evening at which addresses were made by Hon. George H. Carter, U. S. Public Printer, Washington, D. C., and George R. Wallace, Jr., of the Fitchburg Paper Co.

Charles N. Mooney, chairman of the local division, who presided, welcomed the gathering in a few well chosen words and then resigned the direction of affairs to John H. White, of the Whitmore Manufacturing Co., Holyoke, a former mayor of the city, who acted as toastmaster, a post in which he

functions with ease, seeing that he is called upon to tell stories and direct affairs on every occasion there is a big banquet in the Holyoke or Springfield districts.

Toastmaster White first called on Victor E. Fishburn, of the Groveton Paper Co., as representative of the visiting superintendents from the Northeastern Division, who acknowledged the pleasure it was to meet with the Connecticut Valley Division and expressed appreciation of the many courtesies extended to the visitors.

Putting On the Official Seal

The official seal was put on the proceedings, as the toastmaster expressed it, by calling on the mayor of Holyoke, Hon. Gregory H. Scanlon, to convey the city's welcome, which he did in graceful fashion, paying many compliments to the ladies. "I am charmed," said he, "with the beauty and sweetness of the ladies of this gathering. I congratulate the superintendents on the selection of such beautiful women as wives, and the wives of the superintendents on the choice of such upstanding and wholesome-looking men for husbands." He closed by asking the assemblage never to forget Holyoke as a good convention city.

Greetings from President Rooney

Fred J. Rooney, international president of the American Pulp and Paper Mill Superintendents' Association, was introduced and made a pleasing speech conveying the greetings of the national officers. He urged the members of divisions to make full use of the secretary's office.

Views of a Manufacturer

In introducing the next speaker, George Rodney Wallace, Jr., of the Fitchburg Paper Co., Toastmaster White said he was pleased and gratified at the co-operation of manufacturers with the association, and read telegrams from some who had been unable to attend.

Mr. Wallace said he felt it an honor to represent the paper manufacturers of New England in felicitating and congratulating the association on its progress, and gave some personal recollections of his early start as a papermaker in Holyoke. After he had been advanced to the charge of a mill, he had called to his assistance a man who had since become a most efficient paper mill superintendent and a director of the Connecticut Valley Division of the association, naming Tom T. Rogan, of the Fitchburg Paper Co.

Cow Bars Not Fly Bars—Reports of dirty paper came to this mill with disturbing frequency at one time and everything possible was done to remedy conditions but without avail. Someone suggested that flyspecks were to blame, and word was then sent to the chief complainant that measures had been taken by flyscreens and otherwise to keep the paper clean. This brought a reply which said in substance: "I am pleased to note that you are doing everything to protect your paper, but would suggest that instead of putting screens in the windows to keep the flies out you put bars on the door to keep the cows out."

Addressed by the Public Printer

The Hon. George H. Carter, United States Public Printer, was introduced as the best friend of good paper in the country and Toastmaster White expressed his own appreciation as well as that of the members of the Northeastern and Connecticut Valley divisions of Mr. Carter's acceptance of the invitation to be with them that evening.

Mr. Carter said it was his understanding that on his visit to Holyoke he was to confer with a group of mill superintendents and he hardly liked the idea of making a speech because "I am appointed by the President to print speeches and not to make them." He went on, however, to make a most informing address, in the course of which he mentioned the fact that the government gets the bulk of its paper from New England mills. All the postcards in use were made in Massachusetts and the public records were printed on paper turned out in the mills of New England, Mr. Carter said. He gave a brief account of the work done at the Government Printing Office, where practically everything was printed except money and bonds and the office did a business of $12,000,000 annually. He said it was not unusual to print a book of 1,000 pages in one night and deliver it stitched and bound to readers next morning. Practically every known type of typesetting machine was employed, there being 250 linotype machines alone used. The years' paper bill amounted to $4,000,000, all government paper being purchased on definite specifications.

Mr. Carter spoke of the operations of the Testing Laboratory, presided over by his assistant, Dr. E. O. Reed, where 200 specimens of paper of all kinds from tissue to finest board and newsprint and ledger were tested. In fact so careful were they in passing on the quality of material received that some paper men say that all they did with a consignment of paper was to boil it and burn it and do everything but print on it. Manufacturers know, however, that their competitors are required to bid on the same paper and meet the same tests, so that there is no discrimination.

Standardization and Control of Papers—Mr. Carter referred to the special investigational work of the Government Printing Office done in co-operation with the United Typothetae of America in tests on commercial ledger and bond papers. The whole industrial world of the United States was turning to standardization and control of products through laboratory research work and the Government Printing Office was merely doing what the industries were doing in standardizing and controlling purchased materials. The work of the Testing Laboratory of the Government Printing Office was not confined to paper alone, babbitt metal being tested as well as other materials used by the printers.

After telling a few stories which were well received, Mr. Carter closed by extending a hearty invitation to the members to visit the Government Printing Office whenever they were in Washington.

At this point, Toastmaster White took occasion to thank the Paper Makers' Chemical Company, Ralph M. Snell and Mr. Johnstone and Mr. Thompson, for the success of the joint meeting and banquet and after an expression of appreciation for the presence at the banquet of so many prominent representatives of the industry, including President S. L. Willson, of the American Writing Paper Co., on whom he told a story that was well invented, if not true. The diners rose and the hall was cleared for dancing which was kept up till midnight.

$18,000,000 Paper Board Merger

A consolidation of the container fabrication plants of the Chicago Mill and Lumber Company, of Chicago, and the Philadelphia Paper Manufacturing Company, of Philadelphia, which has been announced, has made this new $18,000,000 corporation known as the Container Corporation of America, the largest single producer of paper board containers in the world.

The general offices of the new company will be located in Chicago with a branch in Philadelphia. Walter P. Paepke, head of the Chicago Mill and Lumber Company, will be president of the Container Corporation.

Stabilization of prices and the curtailment of price cutting which has been so prevalent to the extent that few concerns have made money, is the main object behind the consolidation, and it is expected that other companies will eventually join the new corporation.

The combined daily output of the Chicago, Cincinnati and Philadelphia plants of the new corporation will be 850 tons or nearly ten per cent of the box board production of the United States.

Only that part of the Chicago Mill and Lumber Company which manufactures paper board has been sold to the new corporation. The principal business of the company is the manufacture of wood boxes.

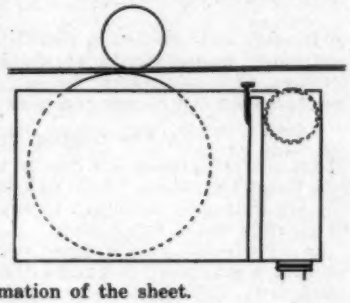
Permanence of Rope Fiber Papers

Through the co-operation of a manufacturer, the Bureau of Standards was given an opportunity of testing some rope fiber papers of definitely known ages. The strength of papers newly made was compared with that of papers around 25 years old. There was little decrease in bursting strength with age but appreciable decrease in folding endurance. The tests were not sufficiently extensive to be conclusive but they indicate that such papers have fair permanence, not of the order of rag fiber papers, but probably better than that of wood fiber papers.

Practical Helps for the Mill Man

Better Formation

AN APPLICATION of the perforated roll for helping formation is made to the cylinder machine in one mill. The perforated roll is placed in the cylinder vat in such a way that the stock flowing over the slices into the section of the vat containing the cylinder must pass through this perforated roll. This breaks up lumps, equalizes the flow and generally tends to improve the formation of the sheet.



Helping Lubrication

SILVER-PLATING bearings by a rough home-made method is said to be an oil saver on light bearings or on bearings where it is certain that the bearing is adequate for the load. This silver-plating is done crudely but effectively by carefully sealing the ends of the bearing, as is done in babbitting, and then introducing a small amount of mercury between the journal or a mandrel and the bearing. The mercury attaches itself to the babbitt and will remain there for a long while, acting as an aid to lubrication.

Eliminating Showers Under Wire

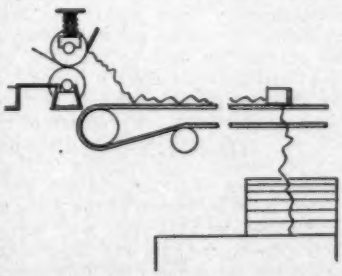
ONE mill superintendent wished to eliminate his white water trays under the wire and run the water taken out of the sheet by the tube rolls directly down into the pit. At the same time he did not want to run all the fresh water from the return roll showers into the white water in the pit. So he took the showers off of the rolls and protected the wire from damage from stock getting around the return rolls by putting doctors on the rolls. These doctors were wooden with a stiff jacket felt lip and work, he says, very satisfactorily.

Calender Air Ducts

GREATER flexibility may be secured in the air pipes on the calenders by using galvanized iron. Galvanized iron ducts used in place of the usual pipe arrangements have the primary advantage of lightness. They are much more flexible than the iron pipes, as the air may be switched from one place on the calenders to another without taking apart and putting together innumerable elbows and short lengths.

Thick Stock to Beaters

A MILL with a number of beaters in which bleaching is done has a novel solution to the problem of bleaching at high consistency in the beaters without having to pump thick stock or to thicken the stock after it is in the beaters. An ordinary wet machine is used together with a belt conveyor, which runs the length of the line of beaters. The pulp is led off of the top roll of the wet machine press in a continuous, crumpled sheet. This sheet is led on to the conveyor, which carries it out over the beaters. At the beater which is to be filled, the sheet is directed off of the conveyor by a board placed across the belt. Thus the pulp is put into the beaters at a consistency of upwards of 20 per cent and can be thinned to a desirable consistency for bleaching with a stream of white water running into the beater simultaneously with the pulp. This eliminates the use of washers in the beaters to thicken the stock and reduces the power consumption by the amount taken for this process.

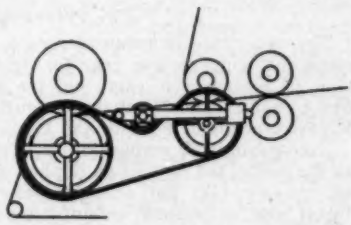


Uniform Groundwood Pulp

UNIFORM pulp and high yield from the groundwood process is the goal of every pulp maker. One mill superintendent claims, and with considerable truth, that the pattern on the stone is the big secret. As all the progress in stone dressing in the past few years has been to this end, there is a good deal to support this claim. This superintendent goes a step farther in getting a uniform pattern. He runs his grinders by direct connected water turbines. When sharpening the stone he slows the stone down so that it is turning at a very slow rate of speed. Then he runs the wheel driving the sharpening lathe at a speed which is in direct proportion to the speed of the stone, thus passing the burr over the face of the stone at a uniform rate of travel. From the grade of pulp secured by this man and the yield per cord, one may conclude that research in this direction would benefit any pulp maker.

Stopping Checking

CHECKS in heavy caliper board are a source of annoyance to the chip and combination board maker, and doubtless to makers of other grades of boards which run to heavy weights. One paper-mill superintendent found that any change in the temperature or the atmospheric condition of his machine room produced checks. He traced this to the effect of the atmosphere on the belt driving the helper rolls or the baby press rolls on the wet end of his machine. He came to the conclusion that the atmospheric change caused a difference in the belt tension and that this effected the draw of the sheet and the felt as they passed from the baby press roll into the first press. To eliminate this trouble he put a tightener pulley on the belt between the first press and the helper roll and controlled the tightener by a lever and weight. This takes care of the effect on the belt of atmospheric change in the machine room and has effectually stopped the checks.



Another paper-machine operator recognizes the draw between the baby press rolls and the first press as a source of trouble from checks, and he says that on heavy boards he is quite likely to ditch the belt altogether and let the felt take care of the baby rolls. This probably gets the results, but it must be severe on the felt.

Flow Meters on Sulphite Steam

SULPHITE cooking has always been done chiefly by control of temperature and pressure. Of late years, the recording temperature and pressure gauges have simplified the matter and given more accurate cooking control. Today, many mills are adding a record flow meter to the digester house instrument board. The intent is to make the cook responsible for excessive use of steam. It is working out successfully and demonstrating that a saving in steam is possible.

Static on Sheet Cutters

THE efficiency of sheet cutters is increased by the use of rubber sleeves on the various steel rolls over which the sheets must pass. This is especially true on light weight papers but is applicable on all kinds of paper. The rolls on the cutter proper are steel. Where the paper is at all dry, these rolls make it difficult for the paper to pass into the cutter and layboy. The rubber sleeve sold by a prominent rubber company has been used to insulate the steel rolls and the efficiency of the cutter and layboy has been greatly increased.

Wisconsin Pulp and Paper Manufacturers Take Advanced Position

Recommend Constructive Legislation for Forest Fire Prevention and Forest Taxation

THE pulp and paper industry's vital interest in its future supplies of raw material has been frequently indicated in recent years, and with increasing emphasis. On May 28th, at Wausau, Wisconsin, the industry presented to the "Interim Committee on Administration and Taxation" of the Wisconsin Legislature, the most constructive and forward looking state forestry program ever proposed by the wood industries of any state.

The program was presented by Mr. D. C. Everest as Chairman of "A Committee Representing the Pulp and Paper Industry of Wisconsin," which had been appointed at a meeting of Wisconsin Pulp and Paper Manufacturers held in Wausau on April 15th, at which practically all the mills in the state were represented. Dr. Hugh P. Baker, executive secretary of the American Paper and Pulp Association, and Mr. D. A. Crocker, secretary-forester of the Woodlands Section of the Association, were also present at the meeting.

The other members of the Committee are: Mr. C. R. Cecil, Cornell Wood Products Co.; Mr. F. E. Sensenbrenner, Kimberly-Clark Co.; Mr. Guy Waldo, Flanbeau Paper Co., and Mr. W. R. Wheaton, Pulpwood Company of Appleton.

Fire Prevention

The committee recommended state appropriations of three cents (5c) per acre per year for fire prevention and suppression, as necessary to carry out the proposed program of the State Conservation Commission, outlined by C. L. Harrington, Superintendent of Forests and Parks.

Recognizing the responsibility of the land owners, as well as the public, the committee further recommended assessments of one cent (1c) per acre per year on all privately owned forest land, conditional on suitable advisory representation of the land owners in the expenditure of such funds.

Forest Taxation

In its discussion of forest taxation, the committee emphasized the part played by present day taxing methods in hastening the cutting of present forested areas and discouraging the holding of cutover lands for reforestation purposes. It endorsed a Forest Yield Tax as the correct solution of the cutover land problem and recommended uniform assessments of uncut lands, with further study of the forest tax problem by all interested parties for the purpose of working out an equitable plan by which the nominal land tax and yield tax may be applied to all classes of forests.

The necessity for such investigations as that of the "Interim Committee on Administration and Taxation" and the United States Forest Service study of forest taxation was emphasized and the work of the Wisconsin Committee particularly commended.

Other Recommendations

Further recommendations by the pulp and paper manufacturers covered greater activity by the state in reforestration of state owned lands and aid to private reforestation by distribution of planting material at cost. The organization of an advisory conservation council was also recommended as of particular assistance in educational work and in bringing together all interested organizations and individuals on a common platform.

Following is the Brief presented by the Pulp and Paper Manufacturers' Committee.

TO THE WISCONSIN LEGISLATIVE INTERIM COMMITTEE ON ADMINISTRATION AND TAXATION

Gentlemen:

In response to your invitation to the wood using industries of the State to submit recommendations with special reference to forestry and taxation, a committee representing the pulp and paper manufacturers of the State, after several conferences, wishes to present for your consideration the following statement and recommendations:

A Few Guiding Principles

turers covered greater activity by the state in reforestation and forest recreation, which includes protection of our wild life are intimately connected in any solution of the problem of the right use of forest lands.

In any effective plan of forest land protection and management, it is recognized that responsibility rests upon all parties concerned: timberland owners, resort owners, hunters and fishermen, the public as a whole, as well as the State and Federal Governments.

Forestry is a land problem and like agriculture is an economic problem. It must be recognized that the State has an investment in every acre of land, good and bad, and that the State, representing as it does the entire people, is under obligation to provide conditions that will allow owners of forest lands and industries dependent upon the forests to operate their plants that they may continue to contribute their share of taxation to the support of the State.

The present system of forest taxation is uneconomic and unsound in that it makes for rapid depletion of forests and not for sound conservation. In fact, the present system of forest taxation offers no incentive to the owner of cutover land to hold such land for reforestation purposes. It is not out of place to conclude that the State in continuing a wrong form of forest taxation has been a party to the rapid cutting off of our forests.

Because of the large capital invested in the pulp and paper industry, and in industries providing raw materials for the paper industry, and because of its standing among the industries in the State, ranking as it does second only to the dairy industry, it is essential to the welfare of the State and the permanency of the paper industry, that prompt measures should be taken by the State to insure the pulp and paper business and the other wood using industries with a permanent supply of wood. The value of the products of the paper and pulp industry in the State was well over $90,000,000 in 1925. It employs large numbers of men and women and generally makes for that economic development so essential to the future of the State.

Recommendations

In order to accomplish the ends sought in providing the wood using industries with a permanent supply of wood, and in order that the pulp and paper mills may secure needed wood supplies from within the State rather than continue expending increasing sums of money for wood brought in from the outside, we believe that the State should immediately adopt and put into effect a forest program that will result in the shortest possible time in restoring our cutover lands to forest productivity. A program of reforestation for the State will, of course, accomplish a great deal more than the production of needed wood supplies in that forest cover means the conservations of water and fish and game.

That the forest lands of the State may be made continuously productive and that they may become an insurable risk for their owners, the pulp and paper manufacturers through their committee recommend the following:

1—Effective Forest Protection

Wisconsin has no adequate system of protection for her forests from fire. She has been legally unable to appropriate funds for forestry until the passage of the recent forest

amendment to the Constitution. We, therefore, recommend strongly that immediate appropriations be made by the State to carry out effectively the recommendations of the State Conservation Commission as outlined by C. L. Harrington, Superintendent of Forests and Parks, for a fire protective system for Wisconsin for 1926. Appropriations are now entirely inadequate for forest protective activities even on a small scale. We believe that there should be appropriated by the State for these activities not less than three cents (3c) per acre per year, at least until the State is thoroughly equipped with fire towers, telephone systems and fire fighting equipment. There should be maintained also a sufficient annual reserve to meet emergency fire fighting needs.

2—Responsibility of Timber Land Owners

We appreciate and recognize the responsibility of land owners as well as the responsibility of the public for the protection and maintenance of forests. We are ready to recommend that all owners of forest land, both forested and cutover, shall assist in the protection of the forest from fire to the extent of one cent (1c) per acre per year, to be assessed at the time land is taxed. This recommendation is made with the understanding that timberland owners shall be represented in an advisory capacity on the board or the commission controlling the expenditures of fire protective and fire fighting funds.

3—Wisconsin Conservation Council

We recommend further that there be organized at once an advisory conservation council to assist in the development and carrying out of policies necessary for the protection and renewal of the forest. This council should be of particular assistance in educational work which seems vital to the proper understanding by the public of the necessity for the protection of the forests from fire. This council should consist of representatives from such organizations as trade associations representing the wood using industries of the State, recreational and fish and game organizations having particular interest in conservation, women's clubs with departments and organizations of professional foresters, etc. The council should work in close co-operation with the State Conservation Commission.

4—Forest Taxation

The present method of taxation of forest lands compels their owner to cut stumpage as rapidly as possible. The present method of taxation of cutover land discourages their owner from holding them for reforestation purposes. As a result of this, large and increasing amounts of cutover lands are becoming delinquent—a loss of taxable property to the State. Therefore, we believe that the one thing which above all others will aid reforestation on cutover lands is a change in the system of taxation which will make it possible for the owner to hold such lands for a future crop. Unfortunately, no immediate legislative relief is possible. An amendment to the constitution changing the so-called Uniformity Clause must be passed before such relief may be made effective. A joint resolution authorizing the submission of such an amendment (amendment to Sec. 1, Art. VIII) to the people passed the last legislature. It must pass the next legislature before it can be actually submitted to the people for referendum. We recommend, therefore, the immediate second passage of this amendment by the next legislature and that the same legislature provide means for submission of the amendment to the people of the State in the election of April, 1927, and if approved by the people, this same legislature should pass laws modifying the present system of forest taxation.

We commend highly the appointment and work of your committee and the work of the United States Forest Service in its study of Forest Taxation. We believe that great good will come from these investigations, but pending results of these studies, we wish to emphasize our belief that a low land tax be applied and a yield tax be assessed when the crop is out.

Forest lands should not be subjected to double taxation, but land and crop should be taxed separately: namely, a nominal tax on all cutover forest lands of five cents per acre with a so-called "yield tax" of approximately ten to fifteen per cent of the stumpage value of the crop to be determined and levied at time of cutting. The State should enter into contractual relations with the timberland owners in the carrying out of the law.

This law should apply to all classes of cutover land, including farmers' wood lots. There should be no upper limit as to area. Since the application of the principle of the yield tax on cutover lands may temporarily deprive certain townships of their present sources of income, we recommend that the State should provide for support of local government in such townships and be later reimbursed by the township at the time the yield tax is collected.

No recommendation is made relative to taxation on present forested areas, beyond the suggestion that for the present the assessment should be on a uniform basis with all other property in the taxing district, but it is our hope that eventually a plan may be worked out, whereby the nominal land tax and yield tax may be equitably applied to all classes of forest area, thus encouraging the holding of present stands as well as the growing of new timber. Prolonging the life of present stands, without undue burden on the owner, seems to us equally as important as promoting new growth, but we have not been able to work out a satisfactory suggestion for the inclusion of timbered lands under such a law.

5—Reforestation

As a phase of forest taxation in the State, we believe that while fire protection will bring about new growth on large areas of cutover land, there are certain lands which can bring about much more direct and quicker returns through planting, especially on State owned forest land. Such land will then become revenue producing, thereby contributing to the support of Government and to lessening the general burden of taxation in the State. The committee is, therefore, in favor of larger appropriations for a comprehensive reforestation program for State lands and the encouraging of reforestation on private lands by distribution of planting material at cost.

We expect to continue the study of Forestry and Taxation by a committee of the pulp and paper industry and request the privilege of submitting further data to your committee, should we have suggestions which we believe to be of benefit in the solution of these problems.

Respectfully submitted: W. R. Wheaton, C. R. Cecil, Guy Waldo, F. E. Sensenbrenner, D. C. Everest.

Committee representing the Pulp and Paper Industry of the State of Wisconsin.

Southern Paper Company's Reforestation Plans

AMONG the timber companies of the South a considerable number have distinguished themselves by a steadfast policy of upbuilding local interests. Some companies have made towns with attractive buildings, parks, golf courses and similar local improvements. Others have fostered local industries which have tended to advance community interests. Still others have undertaken to maintain or increase the productiveness of the timberlands of their region and thereby perpetuate the timber industries.

Among companies that have worked towards permanent production and the regrowth of timber throughout its region the Champion Fibre Company of North Carolina deserves a place of distinction, for its accomplishment in this direction has been definite and large. The Champion Fibre Company has its plant and operation at Canton eighteen miles Southwest of Asheville. Although located only on one railroad its connections draw supplies of raw material from four directions. It has provided a market for great quantities of spruce, hemlock, chestnut, poplar, maple and other woods, and the market was not for the high class lumber but rather for woods refuse and mill refuse and low grade lumber; not for the best trees but for those trees and parts of trees to make good lumber. Slabs and edgings from sawmills, tops and limbs from logging operations, these have been the main food for this operation.

Now, after twenty years of operation its effects on the region can be correctly appraised. The results are clear. It

has helped to clean up the refuse both on big timber tracts and small timber tracts within a radius of 100 to 150 miles of Canton on the four branches of the Southern Railway which serve this plant.

A plant to have such an influence on so large a region must necessarily be large. The Canton operation is said to be the largest single industry in Western North Carolina, and it is one of the great pulp and paper plants of the United States. Its employees number some 2,500. Its freight bill for raw materials and on finished products is something like $1,800,000 per year. Its annual wood requirements is in the neighborhood of 150,000 cords of 160 cubic feet.

A very large quantity of chestnut wood is used. This is first treated to recover the tannic acid extract, and this company is reported to be the largest producer of tannic acid in the country. After this process, the chestnut fibre is then used to produce pulp. In handling pine, the first step is to extract the turpentine, afterwards the fibre goes into pulp and paper.

It will be understood by those acquainted with the pulp business that the great variety of woods used in this plant is made possible because the operation employs three distinct processes of pulp making. Spruce and hemlock are prepared by the sulphite process, while chestnut, poplar, maple and other hardwoods are reduced by the soda process. The sulphate process is employed in reduction of pine pulpwood. The company is also a producer of a number of grades of finished paper. It has two large paper machines and uses the larger part of the pulp which it produces.

The growth of this industry has been gradual. It got under way about twenty years ago on a much smaller scale than at present. In its present development it is a monument to R. B. Robertson, its president and general manager, who has lived with it from its early days of operation.

Building a Reserve Timber Supply

Twenty years ago the timber of the region was in ragged condition. The best of it had been cut. The rough stuff was left. With the removal of this waste and rough timber the country has been prepared for new timber growth. The result is a surpassing stand of fine young forest. Instead of denuding the region, as it was thought at the start, the operation might do, it has been the means of making it far more productive. It has also greatly increased the natural beauty of the woodlands. This spring has greatly emphasized that feature. All over the mountains within 100 miles of Canton, there is now generally a fresh young forest in the beauty of full and vigorous growth. In this way the plant has been not only a great industrial influence but a large esthetic influence that must be studied to be appreciated.

Realizing years ago that the region was being overcut, the company decided to build up for itself a reserve timber supply. It wanted especially to make sure of its supply of spruce and hemlock, because the general supply of these important woods in Western North Carolina was not large and the company thought that the time might come when the sulphite mill would be in want of timber. It, therefore, adopted a purchase program, which, while including a large acreage of hardwood, aimed particularly at spruce and hemlock. At heavy cost it acquired the principal bodies of these woods on the higher portions of the Smoky Mountains. Its holdings are now large, aggregating some 125,000 acres, probably as much as 100,000 acres of which is virgin timber, and for the larger part is truly virgin, never having been cut into for any purpose whatever. So far as its lands have been cut by the company, its operations have been under careful forestry plans and much attention has been given to fire protection. The second growth lands are in excellent condition.

The uncut timberlands of the company represent very large values whether they be considered from the point of view of future supply for this operation or for the general market. The company, however, considers its timberlands only in reference to its own operations. The timberlands are the guarantee of the future life of the great plant and the development of the operation. Without the timberlands the immense plant would have to be written off within a few years, particularly the sulphite portion of the operation. With its present supply of timber the life of the sulphite mill appears to be safeguarded for some 35 to 40 years, while the soda and sulphate mills appear to be fortified for operation in perpetuity.

Planting in Open Spaces

As another step, the company has undertaken the improvements of its lands. It has already begun the planting up of open places, consisting of old field and burns. It is now developing nurseries which will furnish annually several million trees. It will steadfastly pursue the policy of planting until all gaps are filled. It is also pursuing the plan of improving the quality of its timber stands by improvement cuttings. This work can especially be done on sites near the railroad where rough material which it is necessary to handle can be removed at low cost. By reason of furnishing its own market and easy accessibility to railroads, the company is thus able to introduce methods more intensive than even the Government has been able thus far to put into effect in this region.

It is almost needless to say that a fire protection system has been worked out, as every one will understand that this is fundamental. It was the first thing to be done. The system consists of patrolmen and wardens whose work coordinates with that of patrolmen and wardens of the State and Federal Government. The aim is for quick detection in the case of every fire and then quick action in handling it. The fire problem in this section is about as acute as anywhere in the East. The mountain slopes are long and very steep. Spruce and hemlock, which form the forest of the high steep slopes, result in heavy slash, consequently if fires are to be controlled, the system must rest mainly on prevention. The company has had excellent results but notwithstanding system and care some losses were sustained during the extreme drought of 1925 and the spring of 1926. The reforestation and fire protection work are under the direction of W. J. Damtoft, a forester of long experience with the Federal Government and widely known in the Appalachian region.

Desirous that its plans and methods might have the benefit of competent outside opinion, the company recently had its holdings and reforestation work inspected by an officer of Hall, Kellogg & Co. The inspection covered a full week and as a result numerous suggestions were made and several extensions of plans were decided upon or taken under consideration.

The Champion Fibre Company is destined to occupy a prominent place among those timber industries of the South whose careers will not be terminated for want of timber.

Records for Reforestation Broken

Records have been broken in the number of acres reforested this spring, particularly in New York state, where approximately 20,000,000 trees were set out during April and May—more than double the number planted in the spring of last year. The fall planting in New York will probably increase the number to nearly 23,000,000. It is planned to quadruple the number of trees raised in the state nurseries by 1927 over the output of 1925.

Present plans in Pennsylvania provide for doubling tree production in that state by 1928. Other sections of the country are planting more trees than ever before. The plains and prairie states have exceeded other sections in reforesting idle land, having done 54 per cent of all planting. The lake states rank next with 14 per cent, the Middle Atlantic states third with 8.8 per cent, and the Rocky Mountain states are fourth with 7.8 per cent. In all states the farmers are far ahead of all timberland owners in the number of acres planted, having supplied 75 per cent of all the artificially planted forests, while the timberland operators and wood-using industries have reforested only 1.4 per cent.

Effective July 1, 1926, Atterbury Brothers, Inc., of 145 Nassau street, New York, will take over the wood pulp importing firm of Nilsen, Lyon & Company, Inc., of 110 East Forty-second street, New York. Stanley C. Willey, of the latter concern, has been elected vice-president of Atterbury Brothers, Inc., and will conduct the wood pulp business of the Atterbury organization, which will be represented abroad by John Lyon & Company in Gothenburg, and by Anth. B. Nilsen & Company in Oslo.

Beautifying Industrial Property

Protective Fencing Lends Itself to Decorative Purposes

By RUSSELL BYRON WILLIAMS

PROTECTIVE measures have been practiced since the dawn of human existence. Doubtless the first protection was afforded by caves, the mouths of which had been closed by great boulders. It was when primitive man discovered that boulders or earthen-work walls could be extended beyond the cave mouth and made to act as an enclosure, that protective fencing first took form. But primitive man was not troubled with "overhead," "periods of deflation" nor "credit problems." His sole concern was the appeasing of his voracious appetite.

Today the paper manufacturer is not so much concerned with his appetite as with the methods necessary to protect his property and build his business. Singularly, the basic idea of fencing as applied in the form of a wall to a cave or later as a moat to a castle, can be employed to further both ends. Heretofore, we have given little thought to fencing as a factor for the increasing of business. We have been wont to consider it solely as a protective medium. Now, in recognition of the value of beauty, executives and managers of a great many different enterprises are more and more realizing the possibilities for beautifying as well as protecting their property.

In earlier years, protective fencing was usually of the common wood type. These fences were, for the most part, merely plain wood boards nailed to cross bars mounted on cedar posts—an arrangement somewhat remindful of a stockade. These, of course, served a useful purpose, but the rapidity of decay, the ease with which boards could be removed and ingress thus effected; and also the ease with which such a fence might be burned or destroyed as in the case of a strike, clearly demonstrated, in the majority of cases, the imperative need for a more, durable, less destructible type of fence.

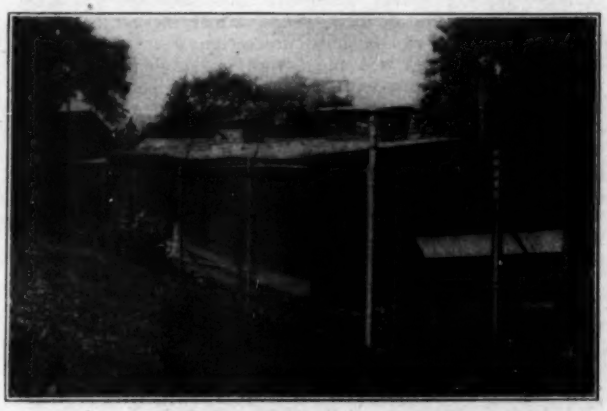
Relatively early therefore, the wrought iron metal fence made its appearance. This type usually consisted of plain iron posts, set erect and joined near the top and bottom by bars, the posts generally being tapered as a silent warning to trespassers. Laying aside the fact that the old wrought iron fences were invariably unsightly, sharply advanced prices for both material and labor soon made this type of protection prohibitive. In isolated instances or in limited application, however, wrought iron fences or gates are still to be seen; the difference being that the wrought iron fence employed today is usually erected without consideration to cost and is merely intended to be an example of the iron working art.

These isolated instances have augmented the appreciation of beauty, however, with the result that many such fences have been replaced by exactly the opposite type of barrier—the hedge fence. Thus it is that in some instances, notably in the suburban districts or where adjacent ground is not needed for the storage of material, beautiful close-cropped privet hedges are seen—with an invariable psychological reaction favorable to the enterprise. Such fences or hedges offer no serious obstruction to intruders, however, and because of this fact are giving way to the more protective type of fence—woven wire mesh.

This type of fence, while not decorative in itself, is certainly far from unsightly. Because of the increased appreciation for beauty, many users of woven wire link fabric have learned to utilize this protective medium as a basis for ivy, honeysuckle, Virginia creeper, rambler roses and other decorative floral growths. These flourish rapidly, require but little attention and provide a most decorative effect.

Attractive Surroundings Create Good Will

In this, a purpose at once aesthetic and valuable is served, because the employees of a paper or pulp mill so protected can hardly fail to be responsive (although perhaps unexpressed) to the essential beauty of their surroundings. Fences of this type, covered with natural growth, tend to mitigate the forbidding, oppressive atmosphere sometimes noted in the field. And whether we sufficiently realize it at the present time, it is nevertheless a fact that such favorable psychology, however unanalyzed or unexpressed, has a very definite bearing on turnover costs, the attitude of the operative to the management, and a far reaching effect on production. Pessimistic reveries on the part of workers are seldom so evident when passing an ivy hidden fence as when passing a bare stone or iron bar fence—notwithstanding the fact that the same degree of protection is afforded. Such a fence furthermore never fails to elicit favorable comment from passersby—which means that good will for the company is being developed—and good will is any company's greatest asset. The single element of good will was recently evaluated by the Shredded Wheat Biscuit Co. as being worth more than five million dollars.



Fence surrounding plant of Nashua River Paper Co., East Pepperell, Mass. This fence, according to the management, has paid for itself many times over in protection. Planting ivy or other clinging growth at the base of this fence would in no way harm the barrier or lessen the protection, but it would add much to the beauty of the surroundings

By the foregoing, the writer does not wish to give the impression that he believes in beauty or attraction to the exclusion of adequate and permanent protection. He fully realizes that mill property of any kind must first of all be protected; that the duty of all fence is first to keep out unwelcome intruders and prevent trespassing; to make possible the utilization of open ground for the storage of material, or to minimize hazards to both employees and the public. For such purposes, it is impossible to find a type of fence more universally suitable than the heavily galvanized, woven wire fabric. Such a fence is of long life and positively non-climbable. Much less expensive than a wrought iron fence or a masonry wall, it is, considering the advanced prices of lumber, frequently not more expensive than wood. Considering its utility, it is economically the most acceptable to a wide variety of industrial plants.

Such a fence can today be seen standing as the omnipresent guard to property around a great many paper and pulp mills, one such installation coming to mind being the exceptionally attractive installation made by the Peninsular Paper Co. at Ypsilanti, Michigan. The company's plant is located along the right-of-way of the Michigan Central Railroad, and for a long time it suffered seriously from the depredations of the brotherhood of "drifters" who were wont to drop off the freight trains and steal articles of clothing as well as an astonishing variety of small tools, mill accessories, etc. Since the installation of the wire fence, all such impositions have automatically ceased. Naturally, the primary purpose of

this fence is to afford protection, but the grounds behind the perpetual guard have been sodded in available places and the trees which are kept well trimmed result in giving the property a most inviting appearance.

Another mill that has successfully used woven wire fabric to beautify as well as protect property is located in Massachusetts. At this plant the Page protected property extends along a paved highway, and that strip of woven wire link fence that borders the traffic laden ribbon of concrete has been overgrown with ivy and morning-glories. The mill superintendent assured the writer that there was not only favorable comments heard from passing motorists, but that the attitude of the men toward their work has been bettered to a marked degree since the vines and shrubs have "reduced the mental pressure of uninteresting scenery." Thus is proven the monetary return value of beautifying our property.

These are but two instances taken at random from the hundreds of protected paper mills of New England, the South and Middle West. In all cases the primal purposes of such fencing is, as it should be, property protection. In a number of these cases, however, attractive decorative schemes have followed the installation of the fence with the result that there is not only afforded adequate protection but the company itself gains the good will and favorable reaction that is the invariable concomitant with beauty. This will doubtless become increasingly in evidence as all industries more fully realize the beneficial effect of beauty. It remains for paper and pulp mill men to learn that the utterly practical safeguard to property also lends itself to decorative purposes—and that any reasonable effort expended in the direction of decorative effect always comes back in the form of augmented public good will, reduced labor turnover, increased civic pride and a more healthy mental attitude on the part of the workers.

Cutting Handling Costs with Electric Industrial Trucks[1]

The Use of Power Driven Materials Handling Equipment in Paper and Pulp Plants Is Becoming Increasingly Imperative

By HAROLD J. PAYNE

Of the Staff of The Society for Electrical Development, Inc.[2]

TO REGARD the handling of material within the plant as a business apart from primary production activities is to make a mistake of the first order. Transportation within and between departments deserves especially thoughtful consideration at a time when the cost of doing this work by the methods that have been used in the past is becoming exceedingly expensive. The pulp and paper manufacturer's dollar now purchases only 44 percent of the labor that it did in 1914—as applied to handling material by the old manual methods this means that the cost of doing this work has more than doubled in this period.

While no figure is available to indicate exactly what proportion of payroll outlay is required in the paper and pulp industry to cover the cost of material handling, a recent survey conducted by the A. C. Nielsen Company brought out that the average for all industry amounts to 21 percent of payroll. It has been estimated that complete mechanization of material handling operations would lower this figure by half. With a present wage outlay in the industry in excess of $150,000,000, the total saving at stake through the introduction of modern equipment and methods is lucrative—the more so at a time when most process operations have very highly developed, thus cutting down on the sources for achieving immediate economies.

An ideal manner of presenting the actual possibilities in this field, from the equipment point of view, would include a discussion of apparatus for hoisting, package handling, loose material conveying and elevating, general hoisting, trackless transportation, industrial rail transportation, special coast storage and handling. Unfortunately the data for such a presentation are lacking.

In the absence of the facts on the relative performance of these various types of equipment, it is enlightening to consider what a single type is actually accomplishing on representative jobs that are commonly met in the industry. If those types above mentioned are classified, they may be seen to fall into one of two categories—either fixed or mobile. Functional differentiation indicates that each machine is designed either for vertical movement, horizontal movement or a combined horizontal and vertical movement of material.

Wide Use of Power Truck

The electric industrial truck is mobile, always provides flexible horizontal movement, and in the tiering modifications provides vertical handling to heights of 10 feet. Its range of utility is perhaps greater in plants designed twenty or thirty years ago than in modern plants for the reason that in building at the present the importance of material handling facilities is appreciated and wherever possible, fixed equipment is installed at the start. There still remain many operations, however, especially in the nature of variable flow between varying points, common to all plants, for which the electric truck is especially well fitted. In general, wherever material is moved on wheels by hand, the power truck, in one of its several modifications, provides a means of lowering the cost of the operation.

Older plants have to compete with new ones. Often layout adequate for the use of the same handling equipment is not available—and under such conditions a compromise is necessary. For such plants it is much better to apply power as efficiently as possible to handling rather than to pass up the possibilities altogether and to continue to use brawn. It has well been said that the American motor always provides a cheaper means for getting the job done than does the Chinese coolie.

Logs to Grinders

A concrete instance of this point is provided in the practice of a Maine mill in handling logs to grinders. Two high lift trucks proved better fitted for the job of moving logs from pond to a battery of 8 machines—a distance of 150 to 250 feet—than an industrial railway that had been used previously. Formerly, it was necessary to unload each car as it was brought in and then to handle the wood again as fed to the grinders. With the present system, rehandling is altogether eliminated by placing skid loads of about 3,500 pounds directly on the grinder platforms. Actually only one electric has to be operated at a time to keep the 8-pocket grinders supplied.

Several mills consider it feasible to move broke baskets with an elevating platform truck and when this operation simply constitutes a part of the machine's routine, it is undoubtedly an economical way of conducting the handling, especially where the broke has to travel a considerable distance to be returned to process. Both of these applications work out to greater advantage than doing the same work manually but in a modern mill, the fact remains that a beater for converting broke to slush is usually located under the dry end of the machines and the logs are floated directly into the grinder room.

The materials that are readily handled by electric truck include bagged material, baled stock, wet laps, paper in rolls and in flat packages, box shooks, machinery and mill supplies, and in some cases such bulk materials as coal, ashes, stone, etc. Depending upon the type of service, one of five major modifications of the truck is usually employed—the straight platform general utility truck, and low lift truck that carries its load on platform skids; the tiering truck, similar to the low lift except for the fact that it carries its load up to heights of 4 to 10 feet; the crane truck and the tractor.

Any one of these machines can be installed and operated at a total fixed charge, exclusive of the time of the operator that does not exceed $3.50 per 8-hour day. Against this fixed charge—amounting as can be seen to approximately the wage of a single laborer—a saving of from $3,000 to $15,000, is ordinarily made. This means that for each truck placed in service, from 2 to 10 men can be released for other work. The basis for these statements lies in the practice of 12 plants that

[1] Presented at Seventh Annual Convention of the American Pulp and Paper Mill Superintendents Association, June 3 to 5, 1926, at the Book-Cadillac Hotel, Detroit.

[2] A non profit, non partisan organization having as one of its primary functions the dissemination of authoritative information on the performance and operation of electrical equipment.

employ the equipment—equipment representative of every make now on the market.

Handling of Board

The Beaver Products Co., at its Buffalo plant, where paper is converted from rolls to laminated sheets for marketing, uses 6 trucks of the elevating platform type. The daily cost of operating these trucks, aside from the driver's time, interest and depreciation is 0.78. This figure accurately represents the items of power and maintenance.

From 1919 to 1924, 4 trucks were operated 24 hours a day—thus indicating 15 years as the life of such equipment is usually determined. These units are still performing satisfactorily so the life obtained up to the present is approximately 17 years.

The work of the trucks begins at the cars where inbound shipments of paper are received. A beam is placed across the top of the car and on each end a chain hoist is attached. The rolls are lifted by fastening the lifting gear to the mandrels, then the extra long platform of the truck is run under and when sufficient clearance has been obtained, the roll is dropped, blocked and carried either directly to the laminating machines or to storage—a distance of from 50 to 200 feet. The rolls weigh from 3,000 to 4,000 pounds. In a day a single truck with driver and helper can unload 90 tons. When this is delivered to storage, an overhead crane is used for piling and when stock is running from storage to laminators, the trucks are loaded with this crane.

From laminating, the stock is moved either to the sizing department or to machines for special impress. In either case the distance is about 175 feet. The handling is made on 4-wheel trucks that were formerly pushed by hand. The interesting feature in the present method is that a truck, assigned to the job, pushes these loaded trucks with power without making any direct hitch or without lifting.

After sizing or impress the board is placed on wooden skids that are extra long for movement to sorting and bundling departments. This haul covers approximately 125 feet. The final handling is to the shipping department—again a distance of 200 feet. For these operations two trucks are in use. The average tonnage handled through the plant runs about 35 tons a day.

Conducting Three Jobs

Another plant that has been very successful in using the electric is that of Bird & Son, East Walpole, Mass., makers of roofing products. The product made at the mill where these trucks are used—there are six in the fleet—is finished on the floor below the shipping level. A large amount of it is stored in a warehouse connected by a 150-foot ramp to the shipping platform with a 6 percent upgrade that has to be traveled by the trucks carrying shingles to storage.

The electrics conduct three jobs. Coating machines are supplied with heavy rolls of stock, the finished product is carried from the cutting machines to storage and thence back to railroad cars for shipment. A better idea of the performance of a single truck may be gained from the fact that in a trial test in 9 hours and 40 minutes, 69 trips were made from the lower level, 300 feet, up one flight by elevator, then 300 feet by the ramp, previously described, to storage, carrying an average load of 4,500 pounds.

Most of the work done is by daily assignment. Uusually 2 trucks are in service in the plant proper and 4 are used for loading. To carry on the latter operation, a 7-man gang has been found most effective—consisting of 2 trucks with drivers —with 3 men in the car and 2 in the stock house. Formerly 5-man gangs were used; one truck with 2 men in the storehouse and 2 in the car. So much idle time resulted because of the length of the necessary run with the truck that it was decided to increase the speed of handling by adding one additional truck, with one more man in the car to help in unloading the shingles from the skids and piling. It is interesting to note that the installation of trucks did not lessen the number of men on the payroll but that five men with one power truck loaded 415 tons per week with a fraction of the effort that had previously been required to store away 265 tons using 2 hand trucks with 2 men to a truck. In other words, the installation of the electric industrials was part of the provision a single truck may be gained from the fact that in a trial test in 9 hours and 40 minutes, 69 trips were made from the lower level, 300 feet, up one flight by elevator, then 300 feet by the ramp, previously described, to storage, carrying an average load of 4,500 pounds.

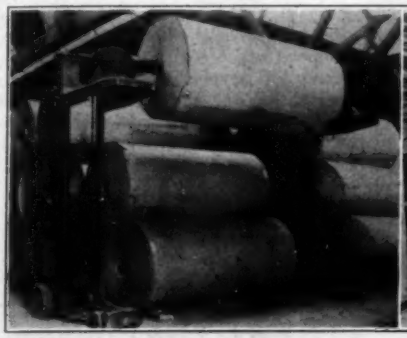


Fig. 1—Synchronized controllers allow freedom of movement in the horizontal plane and also in lifting. The maximum height to which loads may be carried is 110 inches

Fig. 2—Handling skid platforms loaded for shipment. This method reduces time required to load box car by from 20 to 80 per cent

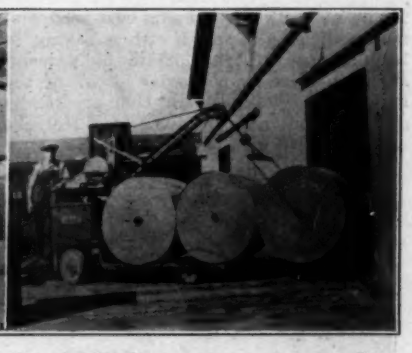


Fig. 3—Auxiliary crane equipment allows handling of cumbersome rolls without providing a helper for the truck driver

Most of the work done is by daily assignment. Usually 2 trucks are in service in the plant proper and 4 are used for loading. To carry on the latter operation, a 7-man gang has been found most effective—consisting of 2 trucks with drivers —with 3 men in the car and 2 in the stock house. Formerly 5 made for increasing production without adding to the number of workers necessary.

It is significant that the men like the power trucks and take pride in keeping them in good running trim. Every Saturday afternoon they go over their machines, each man cleaning and lubricating his own truck. A mechanic works with the men at this time making a careful inspection of the equipment and repairing any trucks in the slightest need of such attention.

Overhead on the six trucks, including repairs, maintenance, power, depreciation and interest, runs about $300 per month or $50 per machine. This works out to an operating cost of approximately .40 per hour. For this outlay the capacity of each of the truckers has been increased from 55 to 83 tons per week. In one day the loading gang handled a 26-car train, each averaging 20 tons.

Other plants might be mentioned that use trucks in the same general manner as do these concerns. There is little point in repetition, however, other than to state that beyond the direct saving in labor that is effected, congestion about elevators is invariably decreased, effecive storage area is increased and the safety of works is made more secure. Despite its speed, the electric is definitely under control at all times and in an emergency can stop within its own length.

The Shipping Skid

The paper industry originated the idea of shipping on skids. At the present there is no longer anything novel in this practice, yet there are many concerns which might employ this method to advantage that still load in the old way. Evidence of this point comes most forcibly through a consideration of the potential savings involved.

A lithograph concern that is a large user of coated stock now receives all of its paper in this form. Where it formerly required the service of 9 or 10 men for half a day to unload a carload of paper, two men using a high lift electric that runs directly into the car, now do the job in 30 minutes. The management of this concern is so well satisfied that it is negotiating with its own customers for shipping everything from gum wrappers to can labels on skids.

The skids are of the destructible type, knocked together from old lumber, and destroyed as soon as they break. For perhaps four or five trips they are good enough to be returned to the mill. The actual skid cost is almost negligible as compared with a saving in loading cost of from 20 to 50 percent. Perhaps there is no better proof of the logic of this practice than that practically all of the pulp entering the city of Holyoke now comes in on skids.

Fig. 4—Handling baled stock of all kinds is the particular function of this type of truck. Where such a unit can be kept busy, the driver's capacity is multiplied five to eight times

Fig. 5—Storing and shipping wet laps on skids is becoming increasingly common. The electric truck offers the combined advantages of flexibility, speed and capacity

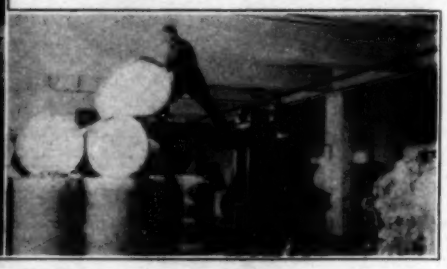


Fig. 6—One man with high-lift truck can tier 1500-lb. rolls up to a height of 8 feet

Of course it may be held that the skid idea is entirely sound whereas the use of a power truck is not justified. In a few instances this is undoubtedly the case but in general, where hand lift trucks are used for handling a considerable volume of material, it pays to use the electric on long hauls. The ideal combination is to have hand lift trucks located for short shifts, and to let the power truck make the longer transfers. With a capacity of two tons at a speed of from 4 to 6 miles, the electric kept reasonably busy handling skids, readily does as much as 5 to 8 men.

Use in Carton Plants

Several concerns making extensive use of this combination might be mentioned, including the Hummel & Downing Co., of Milwaukee and the Robert Gair plant at Piermont, New York. As a matter of fact it seems that most concerns that discover the merits of the hand lift truck are led, as the next step, to the power lift as a means for effecting further cuts.

Both of the concerns mentioned specifically happen to manufacture box board and cartons. At the Hummel & Downing plant about 200 tons of paper are made, laminated, printed and cut, folded, boxed and shipped in a day. Three electrics of the high lift type are used on the two floors occupied by the laminating machines and the other process equipment used for the operations enumerated. The practice of using these machines for handling between operations is followed especially for hauls between process steps that are conducted some distance apart. Each of the power trucks is estimated to save approximately the time of five men.

The Robert Gair plant mentioned uses hand trucks for short hauls, averaging to move 500 pounds at a trip in this way as against an average of from 3,000 to 3,500 pounds when the electrics are used. The oldest of the six units in use at this plant has served eleven years and, according to the master mechanic, is certain to be good for six more. Floors are rough and runways are narrow, but despite these drawbacks the same saving is reported as at the Hummel & Downing plant.

Saving in Storage Space

Paper in rolls continues to present a difficult handling problem—especially from storage to car where overhead crane or tram rail equipment cannot be used effectively. The standard lift trucks, both high and low, are of direct use in some plants and the method used by Beaver Board has other applications. In addition several special roll handling trucks are working out successfully. Perhaps the most interesting trucks of the last type are those recently put into service by the Philadelphia Paper Company—an installation that is ingenious and full of promise.

Two trucks, each of two tons rated capacity, and with a uniform lifting range of 122 inches are used. Each is equipped with a swivel bearing on its platform and the controllers are so arranged that the lifting mechanism can only be operated when the trucks are in low speed or at rest.

Working in tandem these trucks carry rolls weighing up to 5 tons, 110 inches long, with a diameter up to 56 inches. The operations include carrying these rolls from machine to storage and back to process in the same building. Two men constitute the entire handling crew and the total cost of the equipment itself runs approximately $6.00 per day.

More storage space was felt to be imperative—a separate building was expensive, and to install an overhead crane in the present building—which involved raising the roof, strengthening the walls as well as purchasing the equipment—involved an outlay of $35,000. The purchase of these trucks, at a fraction of that expenditure, has provided a solution not only eliminating the necessity for tying up this amount of capital but also cutting down very greatly on the amount of labor required to handle the rolls. Tiering two rolls high, or three if need be, is readily possible with the present equipment.

Another roll handling job, conducted by an Ohio Company, involves the use of a truck employing the principle of an ordinary hand truck. This machine picks up a roll of from 1500 to 2000 pounds, tips it into a position for carrying and at destination reverses this operation. A further development of this truck allows picking up rolls from a horizontal position, turning to vertical and reclining to carrying position so that a single operator can do the entire job.

Electric Tiering Trucks

Three trucks of the tiering type are used at the printing plant of the Metropolitan Life Insurance Co., Long Island City, N. Y. To eliminate rehandling about 500 wooden skids are used. Although 12 tons represents the daily output of the plant, a large number of handlings are involved—not less than 10 to be exact.

Work in the shop is stored entirely in this form. Slack between successive operations is thus provided. A conspicuous saving is effected in that soiled or damaged work is cut to a negligible quantity. Although it cannot be directly estimated,

the very definite saving made in the time of press-men and other skilled workers by having material always on hand and ready to use when required runs high. Another advantage discovered in the use of the power trucks has been the elimination of the heavy and often dangerous work involved when paper in large rolls or heavy packages is handled by hand.

It is impossible to outline the average day's work for any one of the three machines. Their outline includes carrying incoming supplies of paper in flat packages, cases or rolls to storage, and as required to the presses. They also carry finished signatures from press room to bindery and finished work from the bindery to the packaging or shipping departments, or to storage. A special box or crate skid is used for carrying the signatures. Hardly a day goes by that some unusual job does not crop up for which the trucks prove their fitness. Recently, for instance, the machinery in one section of the floor had to be removed to another floor. The trucks were pressed into this service and did the job satisfactorily. Surprisingly narrow aisles are traveled without difficulty, and congested quarters have few points that are inaccessible to the power trucks.

Handling Baled Material

For handling baled material, any one of the lift trucks can be used to advantage. One concern that has to transport cordage put straight platform trucks into service thirteen years ago for this operation—a haul of 900 feet from dock of warehouse up a 1½ per cent grade. The average load consisted of bales, weighing 3,200 pounds. A trial demonstrated that nine men could be released by a single machine. Because of the economy realized, a fleet of 14 trucks of similar design has been built up for this service. If the wages of a stevedore are reckoned at $1,500 a year, the annual saving amounts to $189,000. During 1924, on this haul, freight was transferred by these trucks at an average cost of 40 cents per ton, including all labor and truck charges.

The A. P. W. Paper Company handles bales of pulp from storage to beaters by using a straight platform truck along with trailers for which the load carrier acts also as a tractor. In this operation, which has been conducted since 1914, a saving of 14 men has been realized. This same company, by the way, uses an elevating platform truck with skids in the finishing plant and for shipping, thereby saving 7 workers.

Use of Crane Truck

In the service of the mill-wright gang, the crane truck is especially useful. One concern that has enough work to keep such a machine going steadily states that it has decreased the number of men required for maintenance by 35. Undoubtedly this figure is higher than could be hoped for in the majority of plants but where a considerable amount of heavy handling of apparatus has to be conducted throughout the mill, this type of machine is very well fitted. Another application of the portable crane truck that has been successful is in supplementing the service rendered by overhead handling equipment when production rises to the point where greater capacity is necessary.

Numerous odd jobs fall to the lot of the electric industrial. Cars are spotted in the absence of a switcher by using the truck as a locomotive; a concern that placed tanks for hauling oil and lubricants to all parts of the plant saved 60 man hours a day by the expedient; dump bodies used for handling waste increase the wheelbarrow pusher's capacity by ten times; the Detroit Sulphite Fibre Co. solved its ash handling problem by putting an electric tractor on flange wheels and moving cars from below the grates to an ash dump; another company that formerly kept a man busy 9 hours a day handling starch from storage to mixing department, now moves the entire supply in one or two trips with the power truck that hauls most of the load on a trailer.

Finally, to summarize, the electric industrial is a flexible unit, capable of performing advantageously in by far the larger number of operations dependent upon moving material on wheels. It tends to conserve space, thereby decreasing congestion; it increases general efficiency by insuring that the flow of material will be adequate to process needs; it very definitely decreases labor turnover by taking the backache out of heavy handling; it saves from $3,000 to $10,000 a year—or more—and last but not least it gives workers time, opportunity, and incentive to think—always conducive to better operation. As the Waste Committee of T. A. P. P. I. has pointed out:

"A marked advance in the mechanical handling of materials has been made in the past ten years. This mechanical development will doubtless continue not only because of the reduction in costs and the lessening of labor, but also to eliminate the wasteful use of human energy where it is possible to do the same work as economically by mechanical means. Human energy, in the last analysis, expresses itself in thinking and it is unintelligent to put it to use where its accomplishment is mainly measured in foot pounds."

Acknowledgment

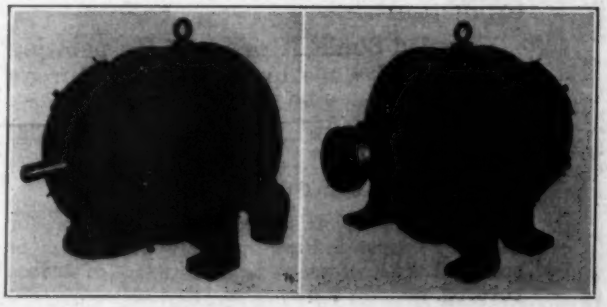
In the development of this outline, invaluable assistance has been rendered by many men in the industry who have made special study of the materials handling problems of particular plants. This list includes Mr. C. W. Weis, Jr., Stecher Lithograph Co., Rochester, N. Y.; Mr. E. P. Kogler, Beaver Products Co., Buffalo, N. Y.; Mr. G. W. Piper, Robert Gair Co., Piermont, N. Y.; R. T. Anderson, Paterson Parchment Paper Co., Passaic, N. J.; Mr. Clemmons, Hummel & Downing Paper Co., Milwaukee, Wis.; Mr. E. T. A. Coughlin, New Jersey Coated Paper Co., Montclair, N. J.; Mr. E. Chamberlain, Bird & Son Co., East Walpole, Mass.; Mr. L. Strattner, West Virginia Pulp & Paper Co., Mechanicville, N. Y.; Mr. Paul Zilske, Detroit Sulphite Fiber Co., Detroit, Mich., and Mr. E. Lawlor, Printing Division, Metropolitan Life Insurance Co., Long Island City, N. Y.

The preparation of this and other surveys of the performance and operation of electric industrial trucks has been made possible by the following member companies of The Society for Electrical Development, Inc., Automatic Transportation Co., Baker Raulang Co., Crescent Truck Co., Eleveyor Electric Industrial Truck Co., Elwell-Parker Electric Co., Lakewood Engineering Co., Yale & Towne Mfg. Co., Edison Storage Battery Co., Electric Storage Battery Co., Philadelphia Storage Battery Co., Electric Products Co., General Electric Co., Hartner Electric Co., Sangamo Electric Co., and Westinghouse Electric & Mfg. Co.

Special Motor for Sectionalized Drive

A new motor especially designed for use in the sectionalized driving of paper machines has been developed by the Reliance Electric & Engineering Co. of Cleveland, O. It has been used in connection with the Harland Engineering Co. interlock control when such control is sold in the United States.

The motor is fully enclosed, with hand-hole covers over the commutator end. Rubber gaskets are put in under the joints.

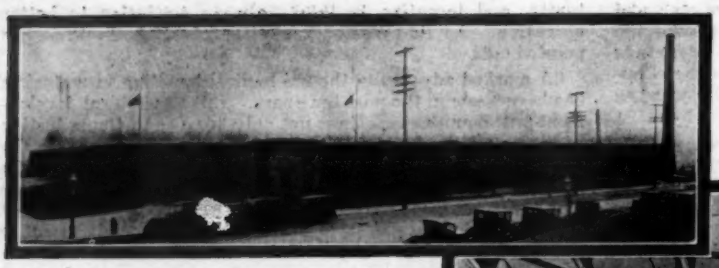


Air is supplied to the commutator end of motor from a duct in the mill basement and is forced through the motor and out into the machine room from the drive end of motor through louvres.

These louvres are so arranged that a fire hose played on the motor will not allow water to get into the windings.

The fresh air supplied keeps the motors driving dryer sections very cool even when dryers are housed in.

The drive end brackets are split, making it very easy to change bearings or take out armatures. Leads are brought out through specially designed conduit fittings.



This plant of the Atwater Kent Mfg. Co., at Philadelphia, famous makers of Radio and other electrical apparatus, covers a ground area of more than 20 acres.

Interior view of the huge Atwater Kent plant. Walls and ceilings have been given long-lasting, lustrous whiteness by painting with Barreled Sunlight—washable as tile.

World-famous Radio Manufacturer paints with Barreled Sunlight

Atwater Kent joins the thousands of industrials that use this lustrous, washable white paint for ceilings and walls • • •

THE Atwater Kent reputation has been built up—and broadcast—by the efficiency of Atwater Kent products. A reputation for the skilled application of science to practical use.

Barreled Sunlight was used for painting ceilings and walls in this manufacturer's great plant, shown above—a plant covering more acreage than 10 football fields! What determined this choice—here and in thousands of other plants in every line?

First—There is a saving in application—for Barreled Sunlight flows on freely with brush or spray, at the lowest cost per square foot of surface covered, making the finished job cost less.

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Fourth—Made by the exclusive Rice Process, Barreled Sunlight is guaranteed to remain white longer than any gloss paint or enamel, domestic or foreign, applied under the same conditions—also, not to flake or scale if properly applied.

Sold in 55- and 30-gallon churn-equipped steel drums, and in cans from ½ pint to 5 gallons. Where more than one coat is required, use Barreled Sunlight Undercoat first. Note coupon below.

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Barreled Sunlight
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News Briefs from Washington

Consular Reports

Newsprint Price Agreement in Italy—Mention was made in the May issue of an increase in the import duty on newsprint entering Italy and an agreement among the manufacturers of this paper there not to increase prices in the face of such protection. Shortly following the receipt of the cable containing this information, the Italian Association of Newspaper Editors and the Association of Paper Manufacturers met in Rome to discuss the terms upon which the manufacturers would agree to a maximum price limit upon newsprint. The solution fixes not only present prices but effects a permanent arrangement for regulating prices in future.

It has been agreed that the maximum price limit corresponding to the requirements set forth in the ministerial decree of September 24, 1923, for orders of at least 300 metric quintals quoted f. o. b. factory, will be established quarterly or at such periods of time as the contracting parties deem advisable. This price will be equivalent to the average obtained by adding the average domestic price of newsprint as delivered to local papers in Austria, Germany, and France and then dividing the sum by three. A commission of seven members, three representing the Paper Manufacturers' Association, three representing the Newspaper Editors' Association, and one nominated by common accord or appointed by the Minister of Finance, has been formed to carry out this price fixing program.

It should be noted that the maximum price limit agreed upon will be observed only upon condition that during the preceding quarter or other period of time agreed upon imparts of roll newsprint shall not have exceeded a fixed amount which at present is 9,000 metric quintals per month. This maximum volume of imports can be varied by the commission in proportion to domestic consumption and monthly differences above or below the fixed import limit can be offset by imports in other months in the same quarter, but for the present the total imports during any quarter must not exceed 27,000 quintals if the price limit as set is to be observed.

The condition of the industry, while not at all critical, holds no brilliant promise, as imports are continuing to increase consistently.

Situation in Germany—The office of the Commercial Attache at Berlin, Germany, reports that German paper production in May approximated that of the preceding month. Bankruptcies, receiverships, and suspensions of activity decreased and stocks on hand increased, while buying was marked by caution in all lines. Pulp and board production decreased and board mills are said to be operating at about 70 per cent of capacity. The manufacturers are considering the advisability of approaching dealers in the United States for the purpose of reaching an international agreement if at all possible.

Swedish Mills Consolidate—Consul General C. I. Dawson at Stockholm, Sweden, states that the A/B Klippans Finpappersbruk has purchased all of the stock of the Lessebo A/B at Lessebo, valued at 3,600,000 crowns. Last year the Lessebo A/B was placed under the management of the Klippans concern but the stock was owned by the Skandinaviska Kredit A/B. Simultaneously it is reported that the Klippans organization purchased all of the stock of the A/B Boksholms Sulfitfabrik at Klippan, valued at 1,500,000 crowns from the banking firm of Cervin. Inasmuch as the Cervin concern already holds a majority of the stock of the A/B Klippans, this means a concentration of these mill interests in the hands of this bank. It is assumed that the consolidation is made for the purpose of improving the condition of the writing paper manufacturers who have lately been complaining of poor market conditions.

New Equipment to Increase Finland's Output—The office of the American Trade Commissioner at Helsingfors, Finland, informs us that the firm of Haarlan Sellulosayhtio, owned by the Haarlan Paperitehdas O/Y, has completed arrangements for the construction of a new cellulose mill. The initial cost of the plant, including buildings, machinery, trackage, and stocks of raw materials, will be about 28,000,000 Finnish marks ($700,000). The erection will be completed in December of this year and the machinery installed next spring. The plant will employ about 140 persons and will have an annual capacity of about 12,000 tons of 60 per cent bleached sulphite pulp. The consumption of wood is calculated at 100,000 cubic meters. The mill will be at Tammerfors.

Consul J. F. McGurk at Helsingfors states that a machine for the production of fine quality paper will be installed during the present summer in the paper mill of the Kangas Pappersbruk A/B at Jyvaskyla, Finland. The additional apparatus, which is an altered machine formerly in possession of the Kymmene A/B, the largest paper mill in Finland, will produce about 3,000 tons per year. The consul also says that the marked improvement in Finland's exports of pulp during April was in large part due to an increased demand for Finnish chemical pulp from foreign rayon mills. The mechanical ground wood market was adversely affected, however, by new plant construction in Sweden, the British general strike, and exchange fluctuations in the currencies of a number of other European countries.

Brazilian Newsprint Interest Growing—A great deal of interest has been shown during the past year in the Brazilian newsprint situation on the part of manufacturers in this country as well as in northern Europe. It is now reported in "O Estado de Sao Paulo," a Brazilian newspaper, of May 27, that Mr. R. N. Miller of the Forest Products Laboratory at Madison, Wis., is in Sao Paulo for the purpose of continuing the experimental work begun a year ago at Madison. This consisted of the grinding of a quantity of Brazilian eucalyptus, a hardwood originally native of Australia, and making from it a roll of newsprint which was used by the Wisconsin State Journal in printing a part of one edition. The results were so successful that additional experimental work is being undertaken. If no adverse factors are found, it will be possible to manufacture newsprint in Brazil at about half the cost of the imported article.

The two species of eucalypts used in the experimental work produced an excellent paper superior to any heretofore used by Brazilian publications and that without recourse to chemical bleaching.

It is pointed out that these experiments will go far to point the way toward a practically untouched supply of pulpwood, the use of which will assist to conserve the North American supply of spruce. These fast growing hardwoods can be grown in California, New Mexico, Arizona, and Florida, where the climate is such that they would reach pulping size in four or five years. One concern in Brazil has approximately 18,000 acres of land occupied by a stand of more than 9,000,000 of these trees, and it is believed that a number of additional small stands have been planted throughout the State.

Austrian Production Slightly Off—A cablegram from Commercial Attache H. L. Groves at Vienna, Austria, reports paper production during April at 16,800 metric tons and chemical pulp at 14,400 tons. While these figures represent a slight increase over the output during the corresponding month of last year, they show a decline of 10 and 14 per cent, respectively, as compared with the preceding month of this year.

Japanese Situation—The office of the Commercial Attache at Tokyo, Japan, states that the mills of the Japanese Paper Manufacturers' Association report a total production during April of 43,180 short tons of paper and sales during the same month of 41,203 tons. The bulk of the output was newsprint with 21,179 tons, followed by best printings with 6,245 tons, ordinary printing with 4,593 tons, wrapping with 1,902 tons, the balance being made up of various grades of native papers.

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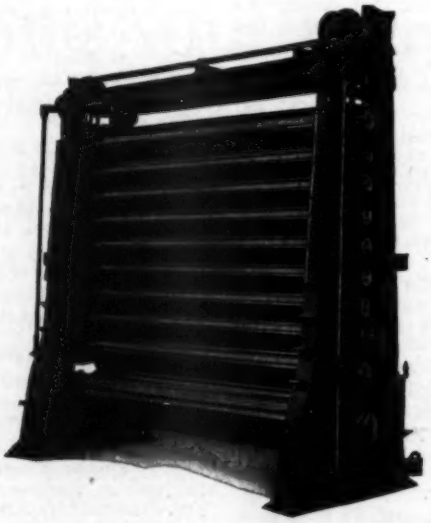

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See Page 366 of the 1926 Pulp and Paper Mill Catalog for a full description of the Lobdell Roll Grinder and Micrometer Caliper.

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Established 1836

Planning for Fiftieth Anniversary

The 50th anniversary of the organization of the American Paper and Pulp Association will be celebrated during Convention Week, February 21 to 24, 1927. The Executive Committee of the Association authorized the appointment of the following representative committee to handle the details of the anniversary celebration with the thought that it should be carried out in such a way as to emphasize as never before, the important place which the industry occupies in American industrial life and the Association in the industry.

50th Anniversary Committee

D. C. Everest, Marathon Paper Mills, Rothschild, Wis.
Louis Bloch, Crown Willamette Paper Co., San Francisco, Calif.
Wm. F. Brunner, Paterson Parchment Paper Co., Passaic, N. J.
Winthrop M. Crane, Jr., Crane & Co., Dalton, Mass.
Geo. S. Holmes, Brown Paper Mill Co., West Monroe, La.
J. P. Hummel, Hummel-Ross Fibre Corp., Hopewell, Va.
Geo. H. Mead, Mead Pulp & Paper Co., Dayton, Ohio.
H. A. Moses, Strathmore Paper Co., Mittineague, Mass.
Reuben B. Robertson, Champion Fibre Co., Canton, N. C.
Norman W. Wilson, Hammermill Paper Co., Erie, Pa.

There are but few trade associations older than the American Paper and Pulp Association. It is doubtful if there are any, of a national character, which so fully represent their industry, or whose organization enables them to present so united a front on matters of vital interest to their industry as does the American Paper and Pulp Association.

The work of the association has been progressing steadily until now it is recognized in Washington, at the various state capitals and in Europe as the central organization of the pulp and paper manufacturers and converters of the United States. Its support by the industry and its accomplishments have given it a prestige which merits a fitting celebration of its 50th anniversary.

Tests of Bond and Ledger Papers

A valuable tabulation of test results on commercial bond and ledger papers appears in a report of special investigational work by the Government Printing Office in co-operation with the United Typothetae of America, issued May, 1926. Tests were conducted under the direction of E. O. Reed, chief of the Testing Laboratory. In the introduction to the tabulation, it is stated that the Government Printing Office, with the approval of the Joint Committee on Printing, has adopted certain standards for bond and ledger papers as the result of a study of the subject during the year 1924. The new report just issued is supplementary to the first report and shows the results of a second series of tests. In publishing the results of the investigation in 1924 the trade brand and name of manufacturer were omitted, but each manufacturer was assigned a letter or letters printed in parentheses after the serial number of all papers submitted by him. The same method has been adopted in publishing the results on the samples submitted for the present investigation, but all manufacturers have been assigned new cipher letters.

In a personal communication from Mr. Reed he informs THE PAPER INDUSTRY that in testing commercial samples of bond and ledger papers no attempt was made to grade the method of drying, whether air, loft, or pole dried, or to classify such factors of quality as general appearance, color, feel, finish, formation, or printability which, he remarks, are distinctive mill characteristics. The report states that inasmuch as the results of the first investigation on bond and ledger papers indicated that the folding endurance test was most indicative of the serviceability, durability, and quality of these papers, the folding endurance test and the bursting strength test were the only physical tests made in the second investigation. The results reported in this tabulation are the average of a sufficient number of tests to furnish fair and accurate information as to the quality of the various samples submitted.

Only the briefest outline of the methods employed is given in the report. A quantitative determination for glue was made of samples containing glue sizing as well as quantitative determination of total rosin. The fiber content was determined by the count method and all chemical wood pulp is reported as to nature of wood fiber, coniferous or broadleaf, and not as to the character of cook, whether soda or sulphite.

In submitting his second report the Hon. George H. Carter, public printer, invites suggestions and comments from those interested in the work.

New Catalogs, Booklets, Etc.

The Cutler-Hammer Mfg. Co., Milwaukee, Wis.—"Industry's Electrical Progress" is the title of a publication recently issued. The book points out the progress made in electrical equipment, particularly in motors and motor control apparatus. Numerous examples of the accomplishments of correct motor control equipment are given. A great many photographs of actual installations are shown.

Cochrane Corp., Philadelphia, Pa.—A heater that stops corrosion in piping, boilers and economizers by removing dissolved air from the water is described in a recently issued booklet.

Dean Hill Pump Co., Anderson, Ind.—A new bulletin on Multi-Stage Centrifugal Pumps has been received. The details of construction are thoroughly gone into and there are numerous illustrations and charts to help in the presentation.

General Electric Co., Schenectady, N. Y.—"Arc Welding in G-E Factories" is an attractive and interesting booklet just off the press. The material is divided into five sections: Manufacturing and Miscellaneous Processes; Tank Manufacturing; Factory Furniture and Fixtures; Salvage and Repairs; and Structural Steel. Each section is profusely illustrated, showing the results that have been obtained with arc welding.

A number of bulletins, covering a variety of subjects and products, have been received from this company. Among them are the following: No. GEA-416, describing Automatic Starting Compensators for Squirrel Cage Induction Motors; No. GEA-372, on Explosion Chambers for High-Voltage Oil Circuit Breakers; No. GEA-19B, covering CR7006-D4 and D5 A-C Enclosed Magnetic Switches; GEA-405, covering Constant Speed Induction Motors for Elevator Service; and No. GEA-435, covering Multi-Speed Induction Motors for Elevator Service.

Metropolitan Life Insurance Co., New York City—Report No. 74 from this company is an attractive booklet on employee magazines. The booklet first discusses the reasons for employee magazines and then goes on to a discussion of the duties of the editor, editorial policy, and the subject matter. The mechanical details, such as type size and style, paper and printing, layout, etc., are clearly and intelligently discussed. The booklet would prove extremely helpful to employers who are thinking of starting an employees' magazine, and would give some very interesting pointers to those who already have such a book within their organizations.

Philadelphia Gear Works, Philadelphia, Pa.—A new catalog on speed reducers has been issued recently. The book tells the advantage of speed reducers in general, and describes the four types of units made by this concern; i. e., spur gear type, worm gear type, spiral-bevel and herringbone type and straight herringbone gear type. The book is completely illustrated with numerous charts and pictures of equipment.

Chas. A. Schieren Co., New York City—"There's Money in This for You" is the title of a new booklet describing the advantages of and the methods of making an endless belt. Each step in the joining process is clearly illustrated and the descriptions are unusually coherent.

Whiting Corporation, Harvey, Ill.—A new condensed catalog of cranes, foundry equipment and various specialties and the products of Whiting subsidiaries has just come off the press. The book is profusely illustrated both with views of equipment and with views of installations. Several suggestive floor layouts for foundries are also presented.

Announcement is made by the Joint Committee, representing the Association of American Wood Pulp Importers, T. A. P. P. I. and the American Paper and Pulp Association, of the appointment of J. Fenton Hogan, of the Diana Paper Company, Harrisville, N. Y., as an approved chemist for the testing of woodpulp.

This service makes friends for your paper

YOU secure dependable results from the use of Kalbfleisch Rosin Size. The service that you also get adds to the advantages of this sizing.

It is an established fact that the smooth operation of the sizing process is necessary to trouble-free production. So Kalbfleisch Engineers are glad to place at your disposal all the information they have acquired from their long and close acquaintance with sizing processes.

The service of Kalbfleisch Engineers is centered upon securing your satisfaction by means of the De Cew Patented Processes with which Kalbfleisch Rosin Size is used.

They are glad to cooperate with you to the end that your sizing operations will measure up to the highest standards of efficiency.

See page 466 in the 1926 Paper and Pulp Mill Catalog

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WISCONSIN NEWS

Application to Build Dam Denied

The application of the Northern Paper Mills of Green Bay for permission to dam the Menominee River at White Rapids, in Marinette County, has been denied by the Wisconsin Railroad Commission for the reason that the application did not comply with the recapture clause of the state water power act. The permission will be granted, it was stated, if the paper-mill owners submit to the recapture clause, which provides that the state may buy the water power after 30 years on the basis of present-day valuation. The applicant objected to the clause on the ground that it is unconstitutional.

A similar situation arose in the project of the Fox River Paper Company, of Appleton, some time ago. The company was refused a permit to rebuild its needle dam. The case was taken to the Circuit Court of Dane County, where a verdict in favor of the railroad commission was rendered. This decision was upheld by the State Supreme Court. The paper company last month, however, decided to appeal the case to the United States Supreme Court. Several pending water-power projects in Wisconsin are hinging upon this forthcoming decision.

Work Started on Kimberly-Clark Clubhouse

Contracts have been awarded for and work has started on the reconstruction of the Niagara, Wis., community clubhouse, operated by the Kimberly-Clark Co. C. R. Meyer & Sons Co., of Oshkosh, have the general contract. The lighting will be in the hands of the Kimberly-Clark Co. electrical department. Workmen set to work last week in wrecking all but the section housing the new improvements.

Improvements to be made will include bowling alleys, kitchen and refreshment lobby, locker rooms for bathers, library, children's reading room, card room, general reception room, offices for the management and athletic coaching staff, lodge room, cloak and ante rooms, dining room, and the ladies' section. The building will probably be ready by October 15.

A number of improvements of note are in process or about to be undertaken by the Continental Paper & Bag Mills Corporation at its Marinette and Menominee Paper Co. plants. The program of construction and equipment includes a new sulphite screen room at the so-called Park Mill, the building to be of concrete and steel. New acid tanks are being installed at both the Park and Menominee mills to meet the demand for increased output of sulphite pulp. More wood preparing machinery also is to be installed. Other installations to be made include new drying and ventilating equipment. A power transmission line guaranteeing continuous supply of electric energy has been built.

Methods of waste disposal of paper and pulp mills were discussed in Madison recently at the second conference of paper mill representatives with state officials. A program of co-operation with the laboratories of the paper concerns was studied, as a step in the aim of solving the stream pollution problems. Representatives of the Fox River Paper Co., Appleton; Kimberly-Clark Co., Neenah; Thilmany Pulp & Paper Co., Kaukauna; Tomahawk-Kraft Paper Co., Tomahawk, and Consolidated Water Power & Paper Co., Wisconsin Rapids, were present.

An up-to-date acid system is being installed in the Wolf River Fibre & Paper Co. plant at Shawano. When completed it will be as modern and efficient as any in the country. The new plant is already being operated in part. The work will be completed in a few more weeks. Two 91-foot concrete towers are replacing the old acid towers. They are lined with acid resisting tile. The new improvements also include a fireproof warehouse for sulphur. This will be 90 by 20 feet. Six cold water wells will be drilled to supply the cooling system. Two new acid pumps and a Jenssen cooler also will be installed. The plant will make sufficient acid to cook forty tons of pulp.

The Cellucotton Products Co., Neenah, subsidiary of the Kimberly-Clark Co., won an important decision in the United States court at Cleveland, O., recently. It brought suit against the Hospital Specialty Co., a Delaware corporation, to prohibit it from infringing on the company's trade mark and trade name of Kotex, woman's sanitary product. The Cellucotton Products Co. was ordered to recover from the defendants the cost of the suit and an injunction was issued against the defendants to prevent further infringement.

Uniting Consolidated Water Powers

One of the final steps in the reorganization of the internal affairs of the Consolidated Water Power & Paper Co. of Wisconsin Rapids was taken last month when the company received a certificate of convenience and necessity from the Wisconsin Railroad Commission authorizing the Consolidated Water Power Co. to purchase for $2,000,000 the water powers of the Consolidated Water Power & Paper Co. at Biron and Wisconsin Rapids. The power company recently changed its name from the Oneida Power Co. It is a subsidiary of the paper company.

The sale was made for the purpose of uniting all of the Consolidated water powers under one ownership for the purpose of administration. Stanton Mead is president of the power company.

C. R. Meyer & Sons Co., of Oshkosh, recently completed a three-story brick building, 75 feet wide and 98 feet long, for the Fox River Paper Co., of Appleton. It was built at a cost of approximately $110,000. The new building contains a filter plant, a modern machine shop, and the offices of the company's engineering department. The work was started about ten months ago. It was necessary to build a large cofferdam as three sides of the building are enclosed by water.

The Tuttle Press Co., Appleton, manufacturers of paper products, has been given the business of decorating the manufacturers' exposition building at the Wisconsin Products Exposition at the state fair, which will take place in Milwaukee the first week of September. The new non-inflammable crepe paper made by the company will be used.

The Green Bay Association of Commerce is taking steps to oppose the published railroad tariffs relating to paper and paper products. It is acting for the paper manufacturers of Green Bay. The change in rates would result in an increase on paper napkins in Green Bay from 20¼ cents to 31 cents a hundredweight from Green Bay to Chicago. It is declared that this feature and the proposal of removing the carload mixing privilege on paper napkins would be a serious blow to the paper industry of that city.

At a meeting of Fox River valley stockholders of the Westminster Paper Mills, New Westminster, British Columbia, Canada, recently, it was voted to authorize the building of a paper machine in the company's converting plant at Bellingham, Wash. The meeting was attended by J. J. Herb, president of the company. C. H. Kelly of Appleton was elected an additional director of the company. Another director was elected by stockholders living in the vicinity of Thorold, Canada. He is John McMahon, who will represent the Eastern Canadian stockholders.

The North American Co., which recently constructed a huge transmission line from Milwaukee to the upper peninsula of Michigan, a part of which line was constructed jointly with the Northern Paper Mills of Green Bay, has purchased five more small companies in the peninsula. They are Amasa Lighting Co., Aurora Electric Light & Power Co., Powers-Spaulding Lighting Co., and Dickinson County Public Service Co. The Iron Mountain Electric Light & Power Co. and the Peninsula Power Co. were taken over previously.

Norman W. Wilson, president of the American Paper and Pulp Association; Dr. Hugh R. Baker, secretary of the

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The time to get the facts about Briner Economizers is NOW — not after the extreme weather is overtaxing your boilers for steam.

The fan shown in the above photograph is exhausting vapor from the Paper machine through a Briner Economizer. The Economizer has utilized the heat from this waste vapor to provide fresh, warm air for the machine room. Consider the tremendous saving of steam that would ordinarily be required to heat this machine room air. Briner Economizers are saving more than four million pounds of steam daily.

See page 388 in the 1926 Paper and Pulp Mill Catalogue

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association, and W. G. McNaughton, secretary of the Technical Division of the association, last month visited a number of paper mill cities in Wisconsin following the Chicago conference on stream pollution. While in Neenah they were guests of F. J. Sensenbrenner, general manager of the Kimberly-Clark Co., at a luncheon attended by about 60 men interested in the paper manufacture.

The paper industry of Appleton will be featured by word and picture in a beautiful souvenir booklet being prepared by the Appleton Chamber of Commerce.

The dock and warehouse of the C. & N. W. road in Green Bay recently underwent extensive repairs for the purpose of handling shipments of wood pulp for reshipment to the paper mills of the Fox River valley. Green Bay has always been considered an ideal point for the establishment of warehouse facilities for the trans-shipment of wood pulp. Tht steamer Argo, owned by the Nissen Lumber Co., was the first boat to arrive with a shipment of wood pulp for distribution in this manner. It brought about 1,300 tons.

The Insull interests which recently acquired a number of public utilities in Wisconsin have applied to the federal power commission for a preliminary permit for a water power project in the Menominee Indian reservation in Shawano County. The company plans to build six dams and power stations along the Wolf River and a master station to control the others. The system when completed would have a capacity of 8,000 horsepower.

The first three-masted schooner to be seen at Green Bay in many years arrived at that port last month with a shipment of 600 tons of wood pulp for reshipment to paper mills in the Fox River valley.

Scenes of the old logging days were re-enacted at Shawano last month when 200,000 feet of pulp wood and a similar amount of pine were floated down the Wolf River from Smoky Falls. The pine was for a lumber company and the pulp wood for the Wolf River Paper & Fibre Co., of Shawano.

L. M. Alexander, Port Edwards, president of the Nekoosa-Edwards Paper Co., was re-elected president of the board of trustees of Lawrence College in Appleton. The board authorized a campaign to raise $3,000,000 for construction of new buildings and adding to the endowment fund.

George A. Whiting, Neenah, president of the George A. Whiting Paper Co., of Menasha, recently presented the new Masonic temple of Neenah with two gargoyles of genuine Egyptian cut stone.

Members of the Wisconsin Paper Merchants' Association held a meeting in Wausau on June 17. D. C. Everest, general manager of the Marathon Paper Mills Co., of that vicinity, spoke on business conditions in the paper industry.

Work has started on the huge dam project of the Wisconsin River Paper & Pulp Co. on the Wisconsin River at Stevens Point. The dam will be approximately 900 feet long and 24 feet high. The old crib dam which was in use here for a large number of years will be removed. The new structure will have a spillway section and 20 gates. C. R. Meyer & Sons Co., of Oshkosh, have been awarded the construction contract.

The Sixty and Two Convention of Jenkins Bros.

The Sixty and Two Convention of salesmen and representatives of Jenkins Bros., New York City, was held June 7, 8, 9 and 10 in commemoration of the sixty-second year of Jenkins Bros. business. Representatives from Canada, England, Cuba and Mexico attended.

The program included meetings at the executive offices in New York, and trips through the bronze and iron valve factories at Bridgeport, Conn., and through Jenkins Bros. rubber division at Elizabeth, N. J.

MICHIGAN NEWS

Kazoo Mills in Prosperous Condition

The Western Board and Paper Co. are gradually reducing their bonded indebtedness, this time by calling in on July 1st of $30,000 of their outstanding bonds. These bonds were issued for the rebuilding of their machine and enlargement of their power plant. This investment has certainly made an excellent investment for the Western Board.

The Sutherland Paper Company called in all their bonds and split a mellon the first of this year in the shape of a stock dividend for all the common stock holders.

The Bryant Paper Co. is gradually calling in their bonds, offering owners the opportunity to set their price. These bonds were issued for the erection of the new power plant and the electrification of the Bryant and Superior Divisions.

The Kalamazoo Vegetable Parchment is also buying up its own bonds before maturity. These bonds were issued to build their new mill.

Several of the other mills are setting a definite amount aside from their net sales to buy up the preferred stock of their own organization. This reduces the fixed interest charge due every year and tends to make the common stock of these concerns an excellent investment.

The will of A. H. Dwight, consisting of $137,000, most of which is left to relatives, has been admitted to probate. Herbert Pardee, Robert L. Pease, and Fred C. Clark were appointed executors of the will, and their bond was fixed at $150,000. Mr. Pease is connected with Knowleton Bros. of Watertown, N. Y., and Mr. Clark is vice president and general manager at the Hawthorne Paper Co. Mr. Dwight was president of the Hawthorne Paper Co.

The steamer Hillcrest, loaded with English China clay and consigned to W. H. Knight, is due to arrive in South Haven, June 19th. Mr. Knight who supplies Michigan and Wisconsin coating mills with this product reports that the recent strike in England held this boat up nearly three weeks. Another hindrance has been the lateness of the season, transportation in the St. Lawrence river being pretty effectually blocked until two weeks ago.

About a thousand tons of old and over-issue newspapers are shipped annually from the United States to Central American countries, according to Howard H. Tewsbury, manager of the Detroit office of the United States Department of Commerce. In a communication to C. H. Winslow, traffic manager of the Chamber of Commerce, Kalamazoo, Mr. Tewksbury states that a major portion of this tonnage goes to small shops for wrapping packages.

Kalamazoo Paraffine Plant to Be Rebuilt

The Kalamazoo Paraffine Company, which during May lost practically all its stock and equipment as the result of a disastrous fire, announces its intention to rebuild. The completed structure will be 80 by 40 feet in dimensions and 22 feet high. Half the building is to be erected immediately, and the balance in the near future.

Concrete foundations and a steel frame work will be employed. The Stefco Steel Company has been awarded the contract for the material and will also erect the structure. The Kalamazoo Paraffine Company is engaged in the manufacture of wax for use in waxed paper plants. It is a subsidiary of the Sutherland Paper Company.

"Co-operate" Is Plea to Mill Engineers

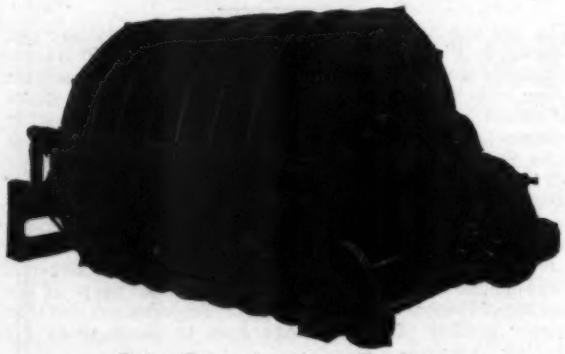
"Co-operation" was the subject of an address delivered Thursday evening in Kalamazoo by Andrew J. Callahan, president of the American Oil Company, Jackson, Mich. He was the speaker at a dinner session of papermill engineers in the Park-American Hotel. It was a well attended gathering, bringing to Kalamazoo paper mill workers from all over the state and in addition several engineers now in the employ of the Postum Cereal Company and Kellogg Corn Flakes Com-

Try This Experiment Yourself!

To Prove How You Can Save the Pulp Left in Your Paper Machine White Water

Take a piece of filter paper—line a small funnel with it—go outside your own mill to the stream of white water which runs from your paper mill machinery—strain some of it through the funnel—then watch the filter paper hold fiber and let the water run through clean.

That, in a crude way, shows you how the American Continuous Filter will save you practically all the waste stock you throw away every day in white water. This filter is made up of slowly revolving discs. White water enters the machine and is forced at the woven screens on the discs. These hold the fiber which in turn holds oncoming fiber, until a solid mass of matted pulp is built up—similar to the filter paper in the funnel—which is the real filter medium. After the water has passed through this compact mass, it runs out of the American Filter clear and clean.



Pulp Type American Continuous Filter. Furnished in Sizes Containing 1 to 10 Discs and Capacities Ranging from 250 to 6,000 Gallons per Minute.

Then Watch This Experiment

Ask any one of our offices to give you a demonstration. We have small 300-pound units of the American Filter which our representatives will set up in your mill and show you how thoroughly and completely an operating size American will not only filter valuable stock from white water but thicken groundwood and chemical pulp.

American Continuous Filters
Sweetland and Kelly Pressure Filters

UNITED
AMERICAN
SWEETLAND
KELLY
FILTERS

United Filter Presses
Sweetland Thickeners

UNITED FILTERS CORPORATION

Main Office and Laboratory, Hazelton, Pennsylvania

New York Los Angeles Chicago Salt Lake City

Export Office—25 Broadway, New York, N. Y.

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pany, Battle Creek. Edward C. Tutz, chief engineer at the Bryant Paper Company, presided. J. P. Callahan, Kalamazoo representative of the American Oil Company, also made a few remarks.

"The foundation of any organization or business is confidence," said President Callahan in his opening remarks. "It springs from integrity, fair dealing, and mutual service. Confidence is the life blood of the nation—of your business and my business. If it were not for this, how far would we get?"

Watervliet Co. Offers $500,000 Bond Issue

First mortgage 6 per cent bonds of the Watervliet Paper Company to the amount of $500,000 were offered June 30th by Olmstead and Mulhall, investment brokers of Kalamazoo, who had purchased the entire issue. The Kalamazoo National bank is trustee. The issue is dated June 15, 1926, and runs to June 15, 1941, being retired serially over a term of 15 years. During the first five years any portion of the issue is callable at 102 at the option of the company. After that par-price will prevail.

Funds derived from the sale of these bonds will be used for the installation of a 120 inch high speed fourdrinier paper machine, product of the J. H. Horne and Sons Company, auxiliary machinery and enlargement of the finishing and coating divisions. With the completion of the improvements outlined, the capacity of the mill will be doubled.

According to the bond circular, the average annual net earnings of the concern for the last five years, ending December 31, 1925, were $134,480.

Fire of an unknown origin caused damage in the sorting room of the King Division of the Allied mills Tuesday morning, June 22nd. The flames originated near the blower and spread very rapidly, breaking out many windows and destroying the floor and a portion of the roof. Thirty persons, mostly women and girls, were at work at the other end of the room when the fire was first noticed, but all escaped.

Fatal Accident at Bryant Mill

Collapse of a concrete container pipe at the top of an 80-foot elevator shaft at the Bryant Paper Co., Kalamazoo, recently resulted in the death of Byron E. Ball, 65, a carpenter working on the ground below, and the miraculous escape of Theodore Lance after he was hurled with terrific force against the side of the wooden elevator standard.

The elevator shaft is part of the construction equipment being used by the Boyer Construction Co. in the erection of the new Bryant machine room which will house the big fourdrinier which the company plans to have running by January first.

James A. Cowie, purchasing agent for the Hawthorne Paper Co. was elected president of the Kalamazoo Purchasing Agents' Association at their regular meeting Thursday, June 17th. Paul Kellogg, purchasing agent for the Kalamazoo Stationery Co. was named treasurer.

Farrell Co. Holds Outing and Veterans Dinner

The annual outing of the offices and the engineering department of the Farrel Foundry & Machine Co., Ansonia, Conn., was held at Double Beach, Conn., Saturday, June 26. Lunch was served immediately after arrival at the resort, after which a baseball game between the married men and the single men, and numerous other athletic events took place. After these events a fine shore dinner was served, at the conclusion of which short addresses were made by various officials of the company.

The Veterans' Association of the Farrel Foundry & Machine Co. recently held its annual dinner. In his talk, Mr. Charles F. Bliss, president of the concern, very forcibly pointed out the fact that if the business of the world is to be carried on steadily, there must be world peace. The Rev. Franklin J. Kennedy, pastor of the Methodist Church of New Haven, was the principal speaker of the evening, his address being entitled "Stability and Character."

OHIO NEWS

Meeting of Miami Superintendents

The Miami Valley section of the American Pulp and Paper Mills Superintendent's Association held their regular monthly meeting in the Engineers' Club at Dayton, on Saturday evening, June 26, 1926, with a goodly percentage of their membership in attendance. The meeting was in charge of Mr. G. S. Martindale and Mr. H. C. Ferguson both of Champion Coated Paper Co. of Hamilton.

The program began with a very excellent dinner and was followed with talks by Mr. Thomas H. Savery, Jr., of Chicago, Harry E. Weston formerly Ass't Prof. of Pulp and Paper Manufacture at the New York State College of Forestry and now associated with Mr. Savery, and Mr. H. C. Funsett of the Hagar Strawboard and Paper Co., Cedarville, Ohio.

Mr. Savery in his talk described in some detail the Jennings Hytor Flat Box Unit, Jennings Centrifugal Pump, and Jennings Dryer Exhaust Unit as well as the Bird Shower Pipe, Sta-clean Shower Pipe, Bird Inward Flow Rotary Screen and the new Bird Pulp Screen. He not only discussed the construction of these various units but also from his wide experience told of their operation throughout the industry. Mr. Weston described briefly the construction and operation of the Vickery Felt Conditioner and the Pulmax Drive. Mr. Funsett presented in a very interesting way a report on his trip to the annual convention of the Superintendents' Association which was held the early part of June in Detroit. He spoke in some length on the proceedings at the convention and laid special emphasis on the LaMotte H-Ion Comparator.

Discussion periods followed each of the talks and Mr. Server of the Miami Paper Co. with many others brought out a number of thoughts relative to the talks which will prove of much help to all of those in attendance at the meeting.

After the talks and discussion periods a short business meeting was held in which it was decided that the next meeting should be held on the last Thursday in July at Middletown. The program for this meeting was left in charge of committee.

Gardner-Harvey Employees Enjoy Outing

More than fifteen hundred employees of the Gardner-Harvey Paper Co., Middletown, filled fourteen coaches of a special train which carried them to Chester Park, Cincinnati, which had been procured for the day for the annual picnic of the company.

Every concession of the park was free to the merrymakers and the operators of the various attractions scarcely had an idle moment all day.

After spending the morning boating, swimming and trying out various other thrill producers, the company assembled at the club house where a delightful luncheon was served.

The picnic was under way all afternoon and the participants returned to the city at 7:30, all declaring that it was decidedly the most grand and glorious of any former similar affairs of the company.

George Geran, chairman of the committee which had charge of the arrangements, received many congratulations upon the efficiency with which everything was handled.

The Sidney Paper Box and Novelty Co., of Sidney, with capital stock of $25,000, was incorporated, at Columbus, by George L. Gagoudy, S. V. Willcutts, Taylor Cummins, J. H. Koehnle and D. C. Warner.

State Sues Hydraulic Company

Word was received in Middletown of the appointment of Roy King, well known Columbus attorney, to be special master commissioner to take testimony in the ouster suit of the Attorney General of Ohio against the Middletown Hydraulic company, in which it is sought to force the hydraulic company to discontinue use of water from the Miami and Erie canal feeder at the state dam.

The hydraulic company's water rights were obtained from Abner North, an early pioneer of the Miami Valley, who a

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Where constant operation is essential, use James Reducers. They are a guarantee of efficient, trouble-free operation. They are fully enclosed, unaffected by moisture, steam, or other conditions which exist in the pulp and paper mill, and which detract from the efficient service of other types of speed reduction. Built on the planetary principle, they allow for greater reduction in a given space, and are assurance against break-down and maintenance charges.

It is not uncommon to find James Reducers, with fifteen years of satisfactory operation to their credit, still giving excellent service without care or attention, except occasional lubrication.

James Reducers are made in three types, horizontal drive, angle drive and vertical drive, so that they apply to every driving condition.

Install James Reducers on your drives and give your maintenance man a vacation.

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D. O. JAMES MANUFACTURING COMPANY
1114 West Monroe Street, Chicago, Illinois

D.O.JAMES

century ago had a dam north of the city and whose rights are said to have been transferred to the hydraulic company in 1852.

The ouster suit is said to arise from a lease made to J. R. Goudie and W. H. Johnson of Middletown, two years ago for water power from the Miami and Erie canal, it being contended that lessees are entitled to water used by defendants

New Machinery Company Organized

The Paper Machinery Company of Dayton, was incorporated the past week by J. Sprigg McMahon, R. G. Corwin, R. K. Landis, W. A. Ferguson, and C. V. Jacobs, all members of a widely-known legal firm in that city.

It is understood the company was organized to handle patents on paper machine appliances and for the purpose of acquiring, holding and licensing under patents. The issuance of 2,000 shares of common capital stock has been authorized.

Middletown Figuring on New Enterprise

Middletown, the Paper City of the Miami Valley, stands a chance of having another important industry and one that is closely associated with the manufacture of paper, if all reports are to be relied upon.

A meeting was scheduled for this week by members of the Civic Association to consider the investment features of the enterprise, pending which no details were forthcoming of the nature of the business. It was explained, however, that Middletown being close to the raw products required in the manufactured article was an ideal site. The meeting to consider the plan was called by members of the Bureau of Trade and Commerce of the Civic Association.

Weakness of State Dam Threatens

Weakening of the State dam north of Middletown, first noticed in March, when a sixty foot length off the top was washed away, has now reached a point where it is said to be necessary to discontinue water power for mills using the Middletown hydraulic race.

A ten foot section of the dam has been washed out to a depth of eight feet, letting the water escape and lessening the stand of the headgates. A retaining levee also has been undermined since the weaknesses of the dam first became apparent, and in case of high water a large current might be diverted through the center of Middletown, it is said.

Officials of the Middletown Hydraulic Company have requested permission of the State Department of Public Works to repair the break.

Poos Goes with Miami Valley Coated Paper Co.

The many friends of Walter A. Poos, formerly assistant sales manager of The Peninsular Paper Company at Ypsilanti, Michigan, will be very glad to know that he is now vice-president and sales manager of The Miami Valley Coated Paper Co. of Franklin.

Working together with Mr. Poos is a man well known in the coated paper field—Mr. William T. Schenk, who for the past 30 years has been prominently identified with a well known paper coating mill in the Miami Valley and for several years connected with Black and Clawson, manufacturers of paper mill equipment, Hamilton, Ohio.

The Miami Valley Coated Paper Co. started operations about the first of the year and is now producing a complete line of coated papers, coated enamel book, coated litho and coated specialties in white and colors.

Dayton's fame as a manufacturing city extends to the four corners of the earth—probably from the fact that some of its products are used in all parts of the world.

The Chamber of Commerce has just completed a survey of manufacturing plants in this city, showing that merchandise valued at $25,000,000 is turned out annually.

Only 10 per cent of the products are consumed locally, hence 90 per cent of the output is shipped to other parts of the United States and to foreign countries. The manufacture of paper and a great variety of paper products contribute largely to the city's output.

Cecil Lawson, 38 years old, of Columbus, died at City Hospital, Middletown, from injuries sustained when at work in the Franklin paper mill five weeks ago. Lawson was trapped between a piece of machinery and the wall of the mill while engaged in installing it.

Book Reviews

"Evaporation."—The newest addition to the Modern Library of Chemical Engineering is "Evaporation," by Alfred L. Webre and Clark S. Robinson. The object of the book, as stated in the preface, is "to present more recent conceptions of the design and operation of evaporators."

The book is divided into four sections and an appendix. The first section is devoted to a general discussion of the theory of Heat Transmission, as well as an elaboration of the principles of Single and Multiple Effect Evaporation, and its corollaries. The discussion is mainly from the standpoint of the function of evaporators, their design, and their selection for a given problem.

The second section takes up the operation of evaporators. The section opens with a short discussion on "Charts for Evaporators," and then proceeds to take up the steps necessary to the successful operation of an evaporator, step by step, dealing with them from the practical standpoint of the operator. Chapters are given to the starting up, shutting down and cleaning, scaling and fouling, condensate removal, feeding systems, practical operation of jet condensers, and other considerations necessary to the operation.

In the third section, the general applications of evaporators to specific industries is taken up. A number of the problems arising in the various industries are discussed, and different methods and processes for overcoming them are discussed. The different types of evaporators best applicable to various industries are also taken up. Quite a lengthy chapter is given to the disposition of waste liquors in paper and pulp mills. The authors, by use of a hypothetical problem, throw considerable light on this subject. The best types of evaporators suitable for operation in paper mills are briefly discussed.

In the last section of the book, the various types of evaporators found in everyday commercial practice are described. A number of manufacturers have contributed articles to this section, describing their types of evaporators, thus making this section very complete and inclusive.

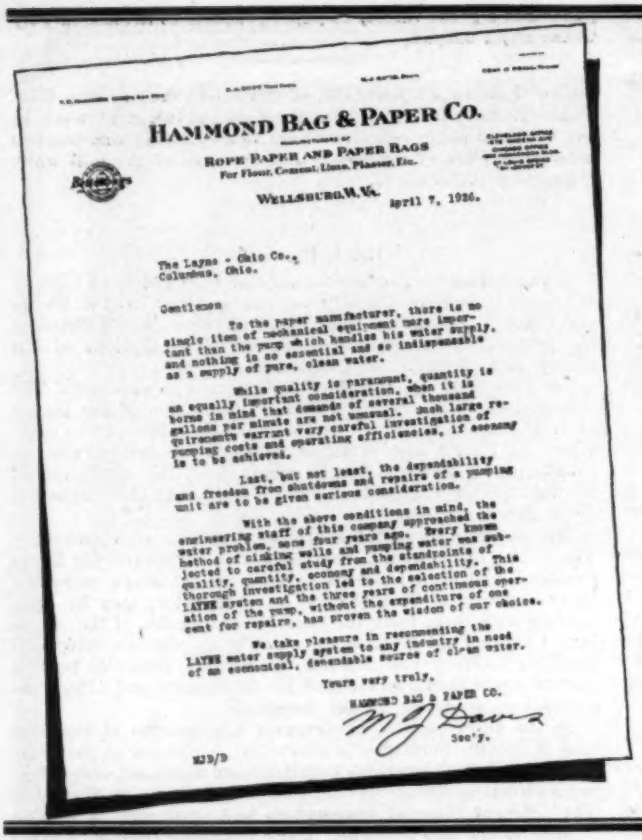
The appendix contains a series of tabulated data useful in working out certain evaporator problems.

As a whole the book is written in a clear, easily understood style. It will make a welcome addition to the library of any chemical engineer. Throughout the entire volume are numerous diagrams, charts, and illustrations that help to clear up a great many points that might otherwise be difficult to understand.

The price of the book is $6.00 net, and copies may be secured from the Chemical Catalog Co., 19-25 East 24th St., New York City.

"Practical Papermaking."—The third edition of George Clapperton's "Practical Papermaking," rewritten by R. H. Clapperton, has recently come off the press. This edition is written along exactly the same lines as the first two; several obsolete processes have been eliminated and several new ones added, and other parts have been rewritten. As its name implies, the book deals with papermaking from a very practical point of view, beginning with the chemical and physical characteristics of various fibres, discussing their properties, uses in different papers, and proceeds through the bleaching, beating, loading, sizing, etc., to the finished paper. All angles of the chemical and the mechanical sides of papermaking are covered in a way that leaves the reader with a great deal of practical information. The illustrations of the microscopical examination of paper have been retained and numerous illustrations of papermaking machinery have been introduced, that assist greatly in the presentation.

The price of the book is $2.50 net, and may be secured from D. Van Nostrand Co., 8 Warren St., New York City.



HAMMOND BAG & PAPER CO.

ROPE PAPER AND PAPER BAGS
For Flour, Cement, Lime, Plaster, Etc.

WELLSBURG, W. VA. April 7, 1926.

The Layne - Ohio Co.,
Columbus, Ohio.

Gentlemen

To the paper manufacturer, there is no single item of mechanical equipment more important than the pump which handles his water supply, and nothing is so essential and so indispensable as a supply of pure, clean water.

While quality is paramount, quantity is an equally important consideration, when it is borne in mind that demands of several thousand gallons per minute are not unusual. Such large requirements warrant very careful investigation of pumping costs and operating efficiencies, if economy is to be achieved.

Last, but not least, the dependability and freedom from shutdowns and repairs of a pumping unit are to be given serious consideration.

With the above conditions in mind, the engineering staff of this company approached the water problem, some four years ago. Every known method of sinking wells and pumping water was subjected to careful study from the standpoints of quality, quantity, economy and dependability. This thorough investigation led to the selection of the LAYNE system and the three years of continuous operation of the pump, without the expenditure of one cent for repairs, has proven the wisdom of our choice.

We take pleasure in recommending the LAYNE water supply system to any industry in need of an economical, dependable source of clean water.

Yours very truly,

HAMMOND BAG & PAPER CO.

Sec'y.

MJD/D

3 YEARS!

Continuous Service
No Shutdown

NO EXPENSE—

An achievement? No! Just a Quality Product putting forth that which is built into it. Holding its place as the recognized leader.

Layne & Bowler Mfg. Co.

HOUSTON MEMPHIS LOS ANGELES

BARRE GRANITE IN PRESS ROLLS

Is Revolutionizing the Whole Paper Making Industry

If your Paper Machines are not equipped with Press Rolls of BARRE GRANITE you are not getting the results that you should get, for it is a recognized fact that granite rolls are much superior to any others and Barre Granite the best of all. Let us tell you about them.

Jones Brothers Company

BARRE, VT. **BOSTON, MASS.**

BRITISH CORRESPONDENCE

Current Conditions

Many paper manufacturers in this country, whose work was interrupted by the recent general strike, are now faced with another serious situation in the shape of a diminution of their coal supplies, owing to the continuation of the coal strike. Some firms are seriously considering the question of obtaining supplies of coal from abroad; others, anticipating the trouble, had laid in sufficient stocks of coal to last them three months, while one or two have facilities for resorting to oil fuel. At the time of writing there appears to be no immediate prospect of a settlement; but, even if the miners were to recommence work tomorrow, there is no doubt that many paper mills will have been seriously hit by this enforced reduction, and in some cases total cessation in output.

The cumulative result of the general strike has been to depress our overseas trade to the lowest level recorded since the coal strike of 1921. Compared with May, 1925, imports show a fall of £23,067,000, while in exports the decline is £18,440,000.

Below are set out the values and quantities of paper trade imports in May, together with the increases or decreases as compared with the corresponding month in the two preceding years:

Raw materials and articles mainly unmanufactured (wood pulp):

May, 1926	Increases as compared with May, 1925, and 1924	
£1,029,986	£98,579	£73,849

Articles wholly or mainly manufactured (paper and cardboard):

May, 1926	Decreases as compared with May, 1925, and 1924	
£908,466	£375,688	£453,463

Quantities:

	1924	1925	1926
Wood pulp (tons).....	94,923	99,976	102,979
Paper (hundredweights)...	1,387,302	1,235,814	920,245

Exports: A glance at the figures set out below proves how disastrously the stoppage has affected the papermaking industry:

Values—Exported in May, 1926

Values: Exported in May, 1926		Decreases as compared with May, 1925, and 1924	
Papermaking materials	£ 96,928	£ 71,064	£ 87,636
Paper and cardboard..	677,773	198,886	110,478

Quantities:	1924	1925	1926
Papermaking materials (tons)....	16,664	15,934	9,703
Paper and cardboard (hundredwts.)	422,276	454,787	353,164

It is anticipated by some of the wrapping-paper manufacturers that the effect of the wrapping-paper duty will enable the mills to work full time, an obvious advantage when it is remembered that many of them for some years past have not been working to full capacity. On the other hand, it is pointed out that it is not anticipated that the duty will stop the importation of foreign supplies, owing to the fact that German wages are far below British, and the Scandinavian manufacturers have no war taxation to bear. It is considered probable that the foreign manufacturer will pay the whole of the tax and pass the whole of it on to his customers.

Satisfactory reports are to hand on the progress of the International Pulp & Chemical Company, the formation of which company was reported in the April issue of THE PAPER INDUSTRY. The company's factories at Konigsberg (Germany) are considered by the British chairman, who has recently paid them a visit, to be in a very strong position, manufacturing a high-class product in world-wide demand.

The progress of paper standardization in this country is making slow, but it is hoped sure progress. The percentage of orders given on the standard basis (per thousand instead of per ream [480 sheets], according to the previous custom) is gradually increasing. It will be some time, however, before the new system becomes popular among the general run of paper consumers.

Results of Bamboo Tests

The following is an abstract of an article which appeared in a special inset in The Pioneer Trade, Industrial and Economic Supplement, which throws an interesting sidelight on the subject of raw materials for paper production in India:

"The pulp and papermaking plant at the Forest Research Institute, Dehra Dun, is a purely experimental installation, designed and equipped on commercial lines, and large enough to permit commercial methods to be used. Its full capacity is equal to a consumption of 20 tons of raw material per week.

"A project which is being experimented with there, attracting most attention at present in northern India, is that known as the Cuttack-Angul project, which proposes to extract bamboo from the Angul forests and float it down the Mahanadi river to a manufacturing site at Cuttack. The bamboo in question has been subject to extensive trials, with results as follows:

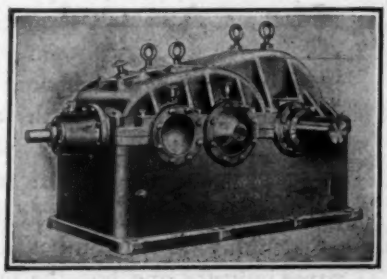
"a—Reduction by the fractional sulphate of soda method, with 18 to 19 per cent of soda salts on weight of bamboo, with a yield of unbleached pulp of 45 to 46 per cent.

"b—Bleaching with 9 per cent standard bleaching powder on unbleached pulp, equal to 4 per cent on bamboo, with a bleached yield of 40 to 41 per cent on original bamboo weight.

"Results, coupled with the low cost of bamboo and a proximity of a coal field, give a total manufacturing cost, inclusive of depreciation and freight of product to Calcutta, of about 75 rupees ($24.30) per ton."

New Speed Reduction Unit

The Philadelphia Gear Works, Philadelphia, Pa., has recently placed on the market a new line of compound spiral-bevel and herringbone gear speed reduction units. This unit



is intended for service where unusually high speeds are necessary, but where it is impractical to use a water cooling system to keep down the temperature of the unit.

The high speed shaft revolves in a single and double row ball thrust bearing. Upon the end of this shaft is a spiral-bevel pinion, which engages in a spiral-bevel gear. This gear and a herringbone pinion are mounted on the same shaft. Where additional reductions are desired an additional set of herringbone gears and pinions are utilized. Lubrication is effected by the splash system, and oil plugs are provided for filling, draining and determining of proper oil level.

The upper half of the housing can be removed without disturbing the gear mountings, bearings, etc.

The Rosser Sales Co., Bangor, Me., reports that they have recently sold five of their one-man mill type rossers to the Fraser's Co., Ltd., to be used in the mill at Edmunton, N. B. They also report selling five of the one-man mill type rossers to the Great Northern Paper Co.'s mill at Madison, Wis.

The Jeffrey Mfg. Co., Columbus, O., announces the election of Mr. Robert W. Gillispie as Vice President, Assistant General Manager and member of the Board of Directors. Mr. Gillispie was for many years identified with the Bethlehem Steel Co., and was a prominent and outstanding figure in the executive sales work of that company.

Better Rolls—-Greater Production—-Trouble-Free Service—-Are The Assured Results With A CAMACHINE

A thoroughly efficient machine capable of slitting wide materials into a number of narrower widths or many narrow strips, is a valuable addition to modern factory equipment where rolls of paper or board of any kind are required in the manufacture of the articles there produced, or where material in roll form is produced for sale to others who utilize it.

May we tell you how Camachines have kept pace with the needs of the paper industry, and how the right slitter and roll-winder will save you money by speeding up production and cutting down waste? Just drop us a line.

CAMERON MACHINE COMPANY
61 POPLAR STREET, BROOKLYN, N.Y.

SLITTERS AND WINDERS FOR EVERY ROLL REQUIREMENT

Canadian Section

C. P. & P. A. to Erect Offices and Laboratories

With the plan of making McGill University and Montreal the center of cellulose research work of the world, the members of the Canadian Pulp and Paper Association, at a special general meeting held in Montreal on June 25th, decided to erect new laboratories on the site of the present Forest Products Laboratories abutting off the campus of McGill University and fronting on University street. The cost of the projected building is to be $350,000.

The meeting was held to decide on the report of the building committee recently appointed, and the project submitted by the committee for the building was approved. This authorizes the secretary of the association, Edward Beck, to arrange for the incorporation of a special holding company, and to enter into negotiations with McGill University for a 40-year lease of land at a nominal rental. The association is to provide the cost of the building. At the meeting the sum of $201,500 was pledged, and the rest is to be provided by members not present at the meeting.

According to Mr. Beck, the work will in all probability be begun next fall and the building will be ready for occupancy in a year's time. The proposed building is to be of a permanent character and of fireproof construction. The basement floor will extend over practically the whole area of the lot, and will average 15 feet in height, which means that a considerable part of it will extend out in the rear of the building proper and can thus be provided with top lighting. Practical accommodation will here be afforded for the semi-commercial pulp and paper-making machinery and the experimental machinery for making artificial silk.

The building proper will be about 160 feet long and 55 feet deep. Above the basement level will be three floors. The first will be devoted almost entirely to the executive offices of the Canadian Pulp and Paper Association, of the Division of Pulp and Paper of the Forest Products Laboratories, and of the Department of Industrial and Cellulose Chemistry of McGill University. On the upper floors will be the library and the various research laboratories of these organizations. Reasonable provision has been made for expansion both in the research laboratories and in the semi-commercial laboratories on the basement floor.

The members of the committee that reported on the project were: L. R. Wilson, Abitibi Power & Paper Co.; Geo. Chahoon, Jr., Laurentide Co.; Col. C. H. L. Jones, Spanish River Pulp & Paper Mills; C. Howard Smith, Howard Smith Paper Mills; I. H. Weldon, Provincial Paper Mills; J. B. White, Canadian International Paper Co.; J. L. Apedaile, Price Bros. & Co.; Geo. M. McKee, St. Maurice Valley Corporation, and Edward Beck, secretary of C. P. & P. A.

The British House of Commons has finally approved the imposition of duties on imported wrapping and packing paper. The duty is of 16⅔ per cent. An amendment to reduce the period of the duty from five years to one year was defeated by 233 votes to 140. Taking the Imperial preference of 33⅓ per cent for granted, the new duty should be of advantage to Canadian paper manufacturers, who compete with Scandinavian and United States manufacturers in the supply of wrapping papers to Great Britain, in addition, of course, to the domestic product.

Tor Johnson, professor of forestry of the Forestry High School at Stockholm, Sweden, and his secretary, Forte Johansson, who is also an expert in forestry, have arrived in this country on the commencement of a tour of several months in North America. Mr. Johnson has come to Canada to make an intensive study of the forest situation here in all its phases. He will study the methods in vogue in Canada for caring for the forests, protecting them from pests, fires and similar agencies, and reforestation work. He also will investigate the industries arising from the forests of Canada, such as the lumber, paper and similar industries.

One of the chief features of the session of the Newfoundland Legislature, which was prorogued recently, was the passing of the H. J. Crowe agreement, whereby the International Paper Company takes over from the former and operates the Hampden timber area in White Bay.

The opinion recently advanced in some quarters that consumption of newsprint is easily keeping pace with increased production seems to be well borne out by the statistics of the News Print Service Bureau. These figures show that for the first four months of the present year, production increased 144,480 tons in Canada and the United States, while shipments to customers increased 146,030 tons in the same period, as compared with the first four months of last year. Furthermore, in order to meet the present demand, the mills are operating at over 98 per cent of capacity in both countries, as compared with 96 per cent a year ago.

It is believed that the Canadian producers of the higher grades of paper stand to benefit by the resumption of the two-cent-postage rate in the Dominion, beginning today. Envelope manufacturers and paper merchants believe that the reduction will give a decided impetus to direct-mail advertising, and thus companies manufacturing high-grade papers should eventually feel an increased demand for their papers.

G. F. Laycock, assistant manager of the pulp and paper mills at Grand Falls, Newfoundland, has returned to his duties at Grand Falls from North Sydney, N. S. Activities at Grand Falls are now reported to be carried on at full capacity.

Ontario and Quebec sections of the Canadian Paper Trade Association met recently in Montreal, when the chief subject discussed from the standpoint of the printing trade had to do with the 1,000-sheet count. The meeting decided that they were prepared to meet the printers at any time and to discuss ways and means of bringing about this new method of distributing paper.

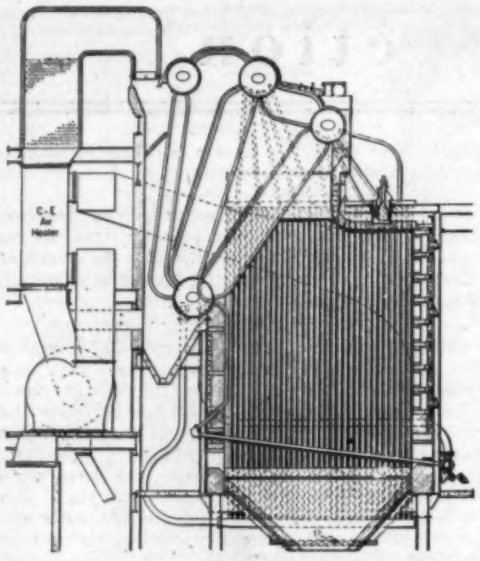
The summer meeting of the Woodlands Section of the Canadian Pulp and Paper Association will be held from July 19th to 23rd at Casey. The members of the section will be the guests of the Laurentide Company, and will be accommodated in the company's camps through the duration of the meeting. Woods operations under way in the district will be inspected, and it is stated that the meeting will be of considerable value to all members who attend.

Box Manufacturers Hold Annual Convention

On June 21st and 22nd, the Canadian Paper Box Manufacturers' Association held their eleventh annual convention in Montreal, there being a total registration of 114 delegates from the provinces of Quebec, Ontario and New Brunswick, as well as from the United States.

Regret was expressed at the absence through illness of J. L. Constantineau, Montreal, president of the association, whose place in the chair was taken by Vice-President B. Sproule, of Toronto. The president's address, which was read by Mr. Sproule, struck a very optimistic note as to the prosperity for which Canada is due in the immediate future, and touched on the tremendous industrial developments which are under way in all the Provinces of the Dominion.

In his annual report, S. J. Frame, secretary-treasurer, said there were 39 associate members, in addition to the 45 active members, the latter being nearly 70 per cent of the paper-box manufacturers of the Dominion. Mr. Frame also expressed



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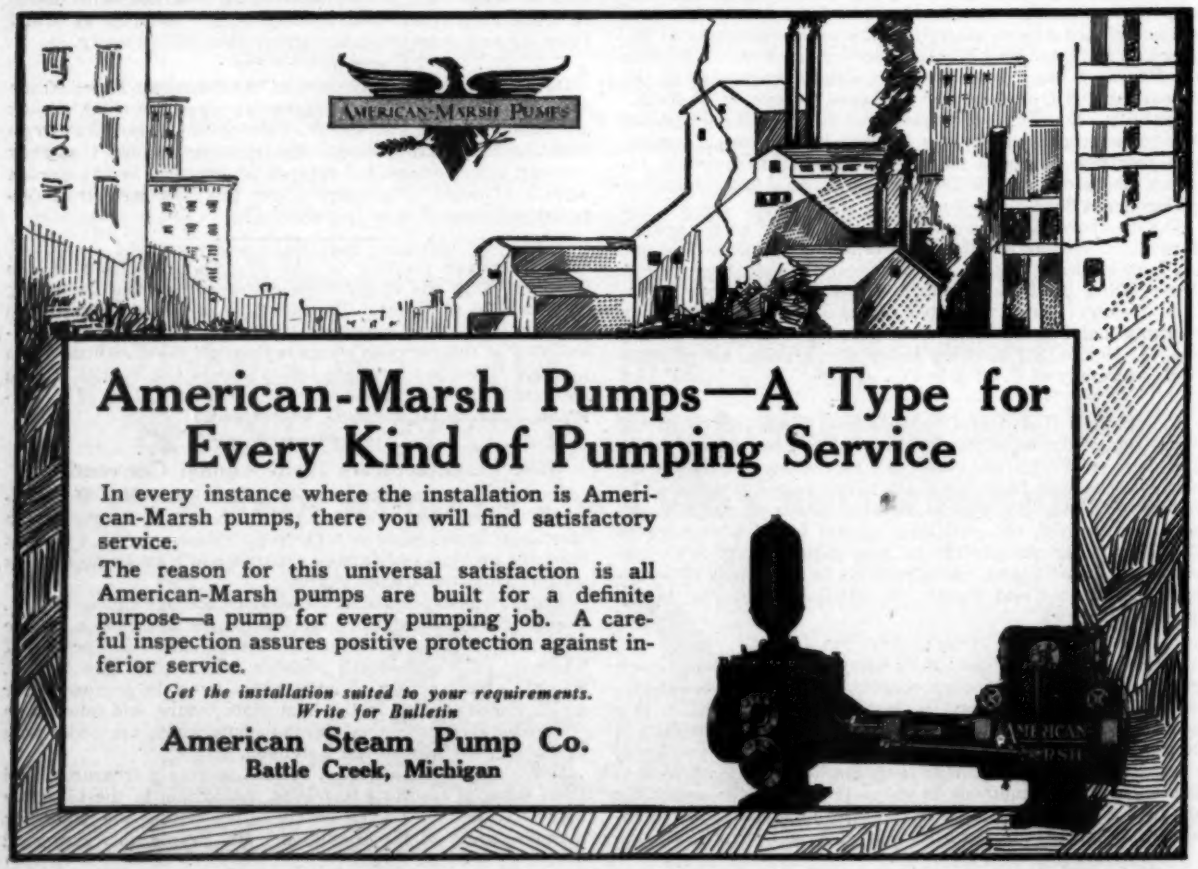

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great confidence in the future of Canada, and more particularly in the prosperity that lies right ahead at the present time. Several business papers were delivered at the morning session.

At noon a convention luncheon was held, when members were called upon to introduce their right-hand neighbor, and the delegates got acquainted all round. The afternoon was devoted to sightseeing. Unity was the keynote of the addresses at the annual banquet.

The following officers were elected for the ensuing year: President, B. Sproule, of Collett-Sproule, Ltd., Toronto; vice-president, F. A. Fielder, of the Fielder Paper Box Co., Toronto. Directors: J. L. Constantineau, of the King Paper Box Co., Montreal; A. C. Telfer, Major Manufacturing Co., Montreal; L. J. A. Amyot, Quebec Paper Box Co., Quebec, and R. S. Dunlop, Dominion Paper Box Co., Toronto.

Toronto was selected as the place for next year's convention.

W. H. Craft, of Wiggins, Teape & Alex. Pirie (Sales), Ltd., London, England, has been on a trip to Canada, his twenty-ninth, and covered the country from Halifax to Vancouver. Mr. Craft reported the firm's business in Canada as quite good, but was inclined to criticize some of the Canadian mills which, he says, sell cheaper in the foreign markets than they do in the domestic markets, thereby creating a lot of competition that would not otherwise exist.

Sir William Stavert has associated himself with H. D. Reid, president of the Reid-Newfoundland Company, in the development of the company's assets in Newfoundland. The Newfoundland property consists of several million acres of lands held in fee simple and including water power, pulp, timber and mineral lands, quantities of iron ores, copper, chrome, gypsum and other minerals.

The reason why the great armament firm of Armstrong, Whitworth & Co. has, like its rival, the Vickers Company, sustained heavy losses since the war were explained in detail at a meeting by Lord Southborough, the newly appointed chairman of the company. The major portion of the company's troubles were due to its participation in a Newfoundland power and paper undertaking, at Corner Brook, in which millions of capital were locked up and losses sustained. This enterprise is now being reformed, additional money found and the management reorganized. Complete control has been transferred from London to the Newfoundland side, with J. Frater Taylor heading the management and member of the board of directors.

QUEBEC

Mead Interests Enter Quebec Field

The Mead interests, which are back of the Abitibi, Spanish River and Fort William paper mills, had until recently confined their Canadian activities to the Province of Ontario. About a year or so ago they associated with the McArthur interests of Winnipeg in the erection of a 200-ton news mill at Fort Alexander, Man., which is now nearing completion and is scheduled to start operating about December of this year. They are now entering the Province of Quebec and, as the Ste. Anne Power & Paper Company, they will proceed immediately with the construction of a 250-ton news mill at Beaupré, a few miles below Quebec on the north shore of the St. Lawrence.

It has been officially announced that Wm. I. Bishop, Ltd., of Montreal, have been awarded the contract for all the construction work in connection with the new mill. Work will be started immediately and the mill is to be ready for installation of the machinery by the 1st of December of this year. No announcement has been made as to the letting of the contract for the equipment; but it is understood that it has gone to a Montreal firm. The mill is scheduled to start producing paper next February.

Messrs. Takeshi Yamada and Saichiro Kitamato, of Tokio, Japan, owners of some of the most important paper mills in Japan, are investigating pulp and paper manufacturing processes used in Canada. They recently visited the mills of the St. Maurice Valley, and they were greatly impressed both by the mills themselves and by the natural resources of the country. They intend to extend the scope of their operations at home, and are making the investigation prior to ordering their pulp and paper-making equipment in America.

New Mill for Lake St. John Region

Mistassini Power & Paper Co., Ltd., was recently organized with a Quebec charter, and has taken over the timber limits and the two water-power rights which were recently purchased from the provincial government by Leaside Engineering Co., of Leaside, Ont. The Mistassini company will proceed to erect a complete newsprint mill of a capacity of 200 tons per day, and will develop its water powers immediately. As much of the construction as possible will be carried on this year, and it is hoped to have the entire construction completed and the mill running by the end of 1927.

E. A. Walberg is the president and principal owner of both Leaside Engineering and Mistassini Power & Paper, and all the capital in both companies is Canadian, and the company will have no affiliations with any other paper company, either Canadian or American. Mr. Walberg is best known as vice-president of Durant Motors of Canada, Ltd.

John Stadler, up to recent years assistant general manager of the Belgo Company and for the last two years general manager of the Newfoundland Power & Paper Company, at Corner Brook, Newfoundland, has been chosen as general manager of the new concern.

The company will have its engineering offices in the Drummond Building, Montreal, while the plant is under construction. The head office of the company will be at Mistassini, in the Lake St. John district, where the mill will be located.

International Paper's Three-Rivers Mill Completed

Canadian International Paper Company has just put into operation four new 164-inch fourdriniers at its Three-Rivers mill, bringing the total number to eight, with a combined rated capacity of 700 tons of newsprint a day, and making it the largest single pulp and paper mill in the world.

The new machines are designed for operation at a speed of 1,200 to 1,400 feet per minute. Two of these machines, which were started up in April and May, are now running at over 1,000 feet per minute, while the last two are expected to reach this speed very soon. All the paper machines in the mill are driven by the General Electric synchronous tie-in type of drives, the last four, however, including some of the more recent developments in this type of drive and utilizing direct-connected synchronous tie-in motors without any cone-pulleys or belts. A new application for a paper mill is the use of direct-connected, overhung synchronous motors for driving twelve Nash vacuum pumps used in connection with the new paper machines, each pump being driven by a 104-horsepower motor.

Besides the paper machines, there were also installed sixteen additional magazine grinders driven by eight light 2,600 h.p. synchronous motors, making a total of 30 grinders driven by 15 motors with a total rating of 37,600 horsepower. In addition, a large number of general purpose motors for various uses were also installed, bringing the total installed horsepower in motors at the Three-Rivers mill up to approximately 50,000.

Howard Smith Expanding Export Business

The export business of the Howard Smith Paper Mills, of Montreal, is growing very rapidly and has proved to be a satisfactory development in the trade of the firm for some time past. It is known that although it is difficult to get entrance into foreign markets, once this has been secured the business is likely to stick with the company. Some good orders for bond paper have been received from England, and as a few years ago English manufacturers had this business pretty much to themselves in Canada, there is all the more satisfaction in this "peaceful penetration" of the British market.

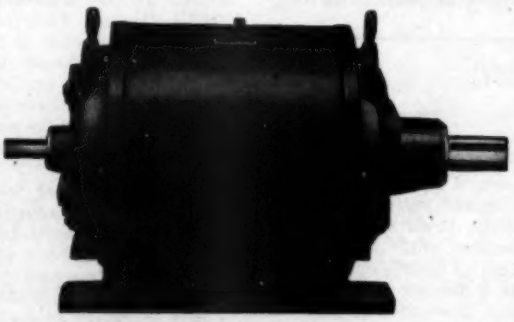
For several years past the company had been seeking lines of production, in addition to their regular bond and writing papers and book paper, which Canadians were importing from

Jones Spur Gear Speed Reducer Driving Kiln in Cement Mill

Closely Approaches the Ideal

Note, in the picture above, the balanced straight line drive from the high speed electric motor to the belt. Note, too, how small and compact this reducer is—and its absolute safety.

Inside the dustproof housing the gears are operating in a constant oil bath, fully protected from the destructive action of grit and dirt in the air. Long life and continuous service are assured. Simple design, foolproof construction, low first cost, negligible upkeep expense and high efficiency in transmission of power characterize Jones Speed Reducers as closely approaching the ideal in speed reduction practice.



They are used to drive conveyors, agitators, stokers, gas producers, water screens, dry kilns, —in short, wherever electric motors are used to drive slower machines. Write for Reducer Catalog Number 26 for full information.

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Jones Speed Reducers

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the United States and Great Britain. Efforts were made to produce such lines in Canada and win over the field held by foreign manufacturers. One of the experiments made was the manufacture of blotting paper, and has proved highly successful, so that gradually this line should bulk largely in the company's output. It is being produced at the Cornwall mill.

Canadian International Paper Company has been showing much interest in the Larrimac Golf Club, located in the Gatineau hills near Kirk's Ferry, in close proximity to their water-power development at Chelsea, and have made a gift to the club of the building that will be converted into a clubhouse.

A new barrage dam is to be built on the Meckinac River, some twenty miles from Shawinigan Falls. The Meckinac runs into the St. Maurice some distance above Grandes Piles, and the dam will further assist in regulating the flow of the St. Maurice at Gran d'Mère, Shawinigan Falls and La Gabelle.

Joseph Collins, aged 21, was seriously injured recently when his arm was caught in a sawdust carrier in the J. R. Booth, Ltd., mill. His left arm had to be amputated and his chest was badly crushed.

Affiliated Engineering Companies, Ltd., Montreal, have been appointed Canadian representatives of Allen-Sherman-Hoff, Ltd., of Philadelphia, Pa., the well-known makers of coal and ash-handling equipment.

The month of May was unusually active in the enrollment of new students in the Institute of Industrial Arts, which is conducting a correspondence course in pulp and papermaking under the auspices of the Canadian Pulp and Paper Association. This is particularly gratifying in view of the fact that at the approach of summer and with schools about to close, it is not customary to find such satisfactory response to the presentation of educational opportunities.

The wedding took place at Quebec on June 9th of Miss Ray Scott, daughter of the late James Scott, of Brakeyville, and of A. C. Price, of Price Brothers & Co. The happy couple went to England on their honeymoon.

It is reported that W. C. Munro, assistant manager of the Tonawanda Paper Company, a subsidiary of the Ontario Paper Company, has been offered an important position with a large Canadian corporation that is opening up business in the manufacture of paper-making machinery.

The Montreal office staff of the Riordan Pulp Corporation recently presented Alfred A. Duffin with a suitably inscribed wrist watch on the occasion of his severing his connection with the company.

V. E. Johnson, manager of the Menjobagues Lumber Company, Lake Menjobagues, was recently tendered a banquet by the employees of the company on the occasion of his departure to assume the duties of his new appointment with the Ste. Anne Pulp & Paper Company. The celebration was a dual one, the occasion being also the thirtieth anniversary of Mr. Johnson's birth. The chief feature of the evening was the presentation of an elaborate address to the guest of honor, accompanied by the gift of a gold watch from the employees of the company.

St. Maurice Extensions Progressing Rapidly

The William I. Bishop Construction Co. is making rapid progress on the new extension of the Belgo Division of St. Maurice Valley Corporation, which will add two more machines and increase the capacity of the mill by about 200 tons of news a day. The orders of the company have never been so numerous, and it recently was obliged to buy a few hundred tons of paper on the market in order to fill its contracts, so that the new production, scheduled to start in December, will be very welcome.

Another extension is being carried out with the construction of a new digester at the St. Maurice Division of the company, at Cap de la Madeleine. A new building is being erected, which ultimately will house two new digesters, one of which will be proceeded with at once and pushed to completion. The digesters will be 49 feet high by 15 feet in diameter, and will each have a capacity of 30 tons of sulphite per day. The work, which is being carried out under the directions of T. A. Wark and S. W. Slater, is expected to be completed by the end of this month.

Passing of Control in E. B. Eddy Plant

Probate has been granted the will of J. T. Shireff, former vice-president of the E. B. Eddy Company, of Hull, who died on May 20th. Specific bequests in the document amount to $294,000, of which $250,000 goes to the Montreal Trust Co., of Montreal, to establish a trust fund in favor of his widow, from which she is to receive an income of $1,000 a month so long as she remains unmarried, and if she marries an annual income of $5,000.

With Montreal Trust Co., Hon. R. B. Bennett, K. C., is named as executor, and the will bequeaths to him 10,081 shares of capital stock in the E. B. Eddy Company, provided that from this he shall pay all estate and succession duties and shall have paid to the Montreal Trust Co. $250,000 for the benefit of the widow. It is understood that this gives Mr. Bennett a majority interest in the company.

It is rumored that, as the match business of this company has been sold to other interests, it is not improbable that their paper mills may yet come under the control of the International Paper Company interests.

Gatineau Power, subsidiary of International Paper, is expected to float a substantial bond issue within the next few weeks to finance water-power development on the Gatineau River.

I. W. McConnell, well-known Montreal financier and a director of Canada's foremost bank, the Bank of Montreal, has been elected a director of the Laurentide Company. His appointment is taken as another indication that the newsprint industry in Canada is working in the direction of a group of interests which may eventually mean that three large companies may control this industry. In fact, it is already claimed that the newsprint of this country is, at the present time, virtually in the hands of five well-known men.

G. Gordon Hale has been appointed general manager of the Gatineau Power Company, a subsidiary of Canadian International Paper Company. Mr. Hale remains vice-president and general manager of the Hull Electric Company, another subsidiary of C. I. P. Co., which position he has held for several years.

Contract Awarded for Celanese Plant

The Foundation Company of Canada, Ltd., of Montreal, has been awarded the contract to construct a complete plant for Canadian Celanese, Ltd., at Drummondville, Que. The general contract let to the Foundation Company includes seven buildings, railroad sidings, roads, walks, sewers and tunnels, and work is to commence immediately. Some of the buildings will be of reinforced concrete throughout, and others will be steel and brick.

This is the second large mill of its kind to be constructed by the Foundation Company. They recently completed the large plant at Cornwall, Ont., for Courtaulds, Ltd., and have under construction at the present time a similar plant in France.

Word has been received from England that Price Bros. & Co. have been successful in the appeal which they had instituted before the Judicial Committee of the Privy Council from the judgment of the Supreme Court of Canada in the action brought by Price Bros. & Co. against the Crown (Province of Quebec) to determine the limits of the Seigniory of Lac Metis, originally granted by King Louis XIV of France in the year 1694. The total area which was in dispute is approximately 52,000 acres.

The tremendously rapid development of the forest and water-power resources of the province is evidenced in the

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CONFUCIUS is credited with the sentiment: "Give me one picture, and I will save a thousand words." A thousand words on the typewriter is a few minutes' work. In Chinese characters they call for a considerable physical effort.

Had the Altamira Cave Man, thousands of years ago, used a written language to describe a buffalo, we would probably be unable to decipher what it was all about. We do understand his picture very readily.

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Hammermill Paper Company

ERIE, PENNSYLVANIA

recent forecasts of the revenue which will be derived before the close of the present fiscal year. Officials of the Department of Lands and Forests are confident that the revenue derived from the lands and forests and water powers in the province will reach the sum of $6,000,000 this year, as compared with nearly $4,500,000 last year.

Completing its present financial program in connection with the installation of its two new newsprint machines, the St. Maurice Valley Corporation has issued $1,300,000 first mortgage and collateral trust 6 per cent bonds. The new machines will increase the capacity of the company's mills from 195,000 to 255,000 tons of newsprint a year. The machines are being installed at the Belgo Division at Shawinigan Falls.

The Fairchild Aerial Surveys Company (of Canada), Ltd., spent part of the winter on an aerial survey for the Wayagamack Company of their limits in Gaspé, and they now have a plane at Anticosti, which will carry Mr. Piché, the Government forester, and will also carry the Wayagamack personnel. Another plane is engaged with James D. Lacey Company, doing survey of the Spanish River Company limits at Biscotasing, Ont.

Sunday Labor Question

That the repair and adjustment work which is invariably conducted on Sundays in pulp and paper mills could be performed during the week, and that they cannot see that those operations have a character of necessity and urgency such as would bring them under the heading of exceptions to the general ruling set forth by the Lord's Day Act, is the first conclusion reached by the special commissioners who have for some time past been studying the question of Sunday labor, in the report which they handed to Premier Taschereau last month. After discussing the reasons for which this work is being carried out on Sunday, the commissioners conclude that they "are of opinion that the question should be further studied to know whether or not the operations of these mills should be permitted."

Edward Beck, secretary of the Canadian Pulp and Paper Association, in discussing the report, stated that Quebec newsprint manufacturers are very apprehensive of any action the authorities may have the intention of taking, that would result in curtailing the production of the paper mills of the Province; and they consider that prohibiting the usual Sunday repair work would result in reducing the period of production by at least twelve hours a week.

The oil-burning tug, which is being operated by the Gatineau Company in the Ottawa district, has created considerable comment, as it is the only steamer of its kind in the vicinity.

ONTARIO

Carroll Succeeds Gain at Merritton

Richard Carroll, who for the past fourteen years has been associated with the Garden City Paper Mills and the Canadian Vegetable Parchment Company, Merritton, is now acting as general manager of these organizations, in succession to C. Nelson Gain, past chairman of the Technical Section of the Canadian Pulp and Paper Association, who recently accepted the position of manager of manufacturing for the Interlake Tissue Mills, at Merritton.

The office of president of these companies, which was held by Charles V. Syrett, of Toronto, who lately resigned, has not been filled.

British Strike Does Not Delay Paper Machine

W. J. Trimble, of Toronto, is making good progress on the extension of the Provincial Paper Mills, Port Arthur Division. The capacity of the ground-wood mill is being doubled, and extensions are being built to the machine and beater rooms for the installation of a second machine.

Provincial Paper has received word from England to the effect that the recent industrial troubles in that country have not in any way delayed the building of their machine by the firm of Charles Walmsley, of Bury, who have promised delivery in October of this year. It is expected that it will be running by the end of the present year.

News Mill to Be Located at Kapuskasing

The Spruce Falls Power & Paper Company, Kapuskasing, have finally decided to locate their 500-ton news mill at Kapuskasing instead of at Smoky Falls. A start has been made on grading the railway from Kapuskasing to Smoky Falls, and excavation is under way for the extension to the sulphite pulp plant. It will be August before work starts on the newsprint mill. A new concrete warehouse, 45 by 200 feet, is being built, and another warehouse shed has been put up to which the present warehouse stock has been removed to make room for two new acid tanks.

There are nearly 200 men employed in the new development. Seven camps are located back of the mill, with an additional cookery and machine shop.

Work is going ahead rapidly on the new 50-ton strawboard mill of the Hinde & Dauch Paper Company, of Canada, in Trenton, about 100 miles east of Toronto. The strawboard will be used for corrugating purposes in the parent plant in Toronto. Two concrete, brick and steel buildings, 300 and 500 feet long, respectively, are being constructed, the latter of which will house the new paper machine.

Fort William Paper to Treble Output

At a recent meeting of the shareholders of the Fort William Paper Company, additions and extensions to the company's mill at Fort William were decided on, and it is stated that the work is to be proceeded with at once. The estimated expenditure is $12,500,000, the intention being to increase the capacity of the news mill from 150 tons to 450 tons and to increase the capacity of the sulphite mill.

The immediate plans this year call for the construction of a $2,000,000 sulphite mill. Next year the paper mill will be doubled, and in 1928 the addition of another unit will bring the plant up to three times its present capacity.

The company has made an issue of $3,500,000 first mortgage 6 per cent gold bonds, due May 1, 1946, for the purpose of retiring outstanding bonds and for providing for capital expenditures.

The objection of one of the big toilet-paper manufacturing concerns in the United States to the registration in that country of the "Velva Tissue" label, owned by the Interlake Tissue Mills, Toronto, has been decided by the United States Patent Office, at Washington, in favor of the Interlake Tissue Mills. The matter was given several hearings.

Cameron & Fraser, Ltd., paper dealers, Toronto, have moved their business offices from 49 to 45-47 Simcoe street, where their warehouse has been for some time.

The thirteen men who graduated this year from the Faculty of Forestry of the University of Toronto have been given permanent work with pulp and paper companies and with the forestry departments of the Provincial or Federal governments.

H. F. Brunton, who for some time has been Ontario representative of the Canadian International Paper Company, Ottawa, with offices in the Federal Building, Toronto, has been transferred to New York City, where he has taken charge of the company's sales.

The Fielder Paper Box Company, Ltd., is adding two stories to the factory premises on Berkley street, Toronto, which, when completed, will about double the capacity of the plant.

Mr. Ed. Stansberry, who has charge of the woods end of Peabody, Houghteling & Co., of Chicago, recently spent a couple of weeks looking over the timber limits of Abitibi

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UNHEARD OF LOW **POWER** PER TON

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VERY LARGE CAPACITY

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OFFERED ONLY AFTER MANY MONTHS OF CAREFUL DEVELOPMENT

Improved Paper Machinery Company

Nashua, N. H., U. S. A.

Power & Paper Company, which he said are looking in splendid shape. Mr. Stansberry was one of the first to visit the Abitibi limits when the mill was begun fourteen years ago, and he remarked that it was a lot easier to get around now than it was then.

Another Mill in the Niagara District

A provincial charter has been granted to the Superior Paper Mills, Ltd., St. Catharines, with an authorized capital of $250,000, and power to operate pulp and paper mills. Among the incorporators are J. M. Cathcart, formerly superintendent of the Interlake Tissue Mills at Merritton, and John T. Berhalter, who for a long time was on the sales staff of the same concern.

It is stated that the company will locate in the old Peerless Paper Mill at Thorold, and has already negotiated with the town council in regard to a fixed assessment of $10,000 for a period of ten years. It has not been stated what lines of paper the new concern proposes to manufacture, but it is generally believed that light-weight papers will be among the lines produced.

I. H. Waldon, president of Provincial Paper Mills, Toronto, and past president of the Canadian Pulp and Paper Association, has been appointed a member of the executive staff of the Toronto Publicity Bureau.

Miss A. B. Jephcott, only daughter of Alfred Jephcott, head of the Dominion Paper Box Company, Toronto, was married recently to A. C. Sanderson, of Toronto.

M. W. Davis has resigned his position with the Abitibi Power & Paper Company and left for Hazleton, Pa., where he has taken a position with the United Filters Company. His work will consist mainly in the sale and installation of filters for ground-wood pulp.

The will of J. R. Booth, Canada's foremost lumberman, who died last fall, was recently filed in the Surrogate Court at Ottawa, and disposes of an estate of $7,626,092. The entire estate is left to his three surviving children, two sons and one daughter, the latter getting one-fourth and each of the former three-eighths of the estate. The largest single holding is the stock in the J. R. Booth, Ltd., valued at $2,397,060, the stock being rated at $60 a share. Besides large bond holdings in the Canadian National Railways, Province of Ontario and Dominion of Canada, were the following: Mattagami Paper Co., $62,400; Continental Paper Products Co., $63,750, and Spanish River Pulp & Paper Mills, $30,352.

S. R. Armstrong, of the Mattagmi Pulp & Paper Company, Toronto, who recently spent a few days at the mills at Smooth Rock Falls, reports that the new sulphite bleaching equipment is now in effective operation and that 100 tons daily are being bleached. Mr. Armstrong hopes that in the near future the entire production of 200 tons a day of easy-bleaching sulphite will be converted into bleached pulp. He says that the market is fairly strong at the present time so far as price is concerned, but sales of late have been rather light.

The Hastings Paper Mills, Ltd., Belleville, who have recently become members of the Canadian Manufacturers' Association, were organized in 1924 to take over the Lazier Paper Mills, manufacturing straw carpet lining. The plant has since been practically rebuilt to make straw paper for corrugating purposes. Chip liner, carpet liner and indented paper are also made. Oswald Porritt is president and Mark G. Cohen secretary-treasurer.

The salesmen of the F. N. Burt Company, Ltd., spent some time recently going over a number of the paper mills in the Niagara district. Among the mills visited were the Interlake and Provincial, where they were shown the various processes of manufacture.

The Kenwood Mills, Arnprior, which supplies many of the larger pulp and paper mills with news felts and other wool products, is building an extension. The addition is 90 feet by

Harnessing Horse Power

Each roll and cut length of belting you buy represents unharnessed horse power—until it is joined and rounding the pulleys. It is the joining that animates the belt, makes it endless and transforms it into a thing of power. Upon the joint depends the life of the belt itself, power and production.

Crescent Belt Fasteners at the joint are your insurance against escaping power, idle machinery, loss of labor, time and production.

Standardized throughout your plant Crescent Belt Fasteners will maintain continuous production. Your belts will give their best service and serve their longest life.

Write for "Harnessing Horse Power in the Paper and Pulp Mills."

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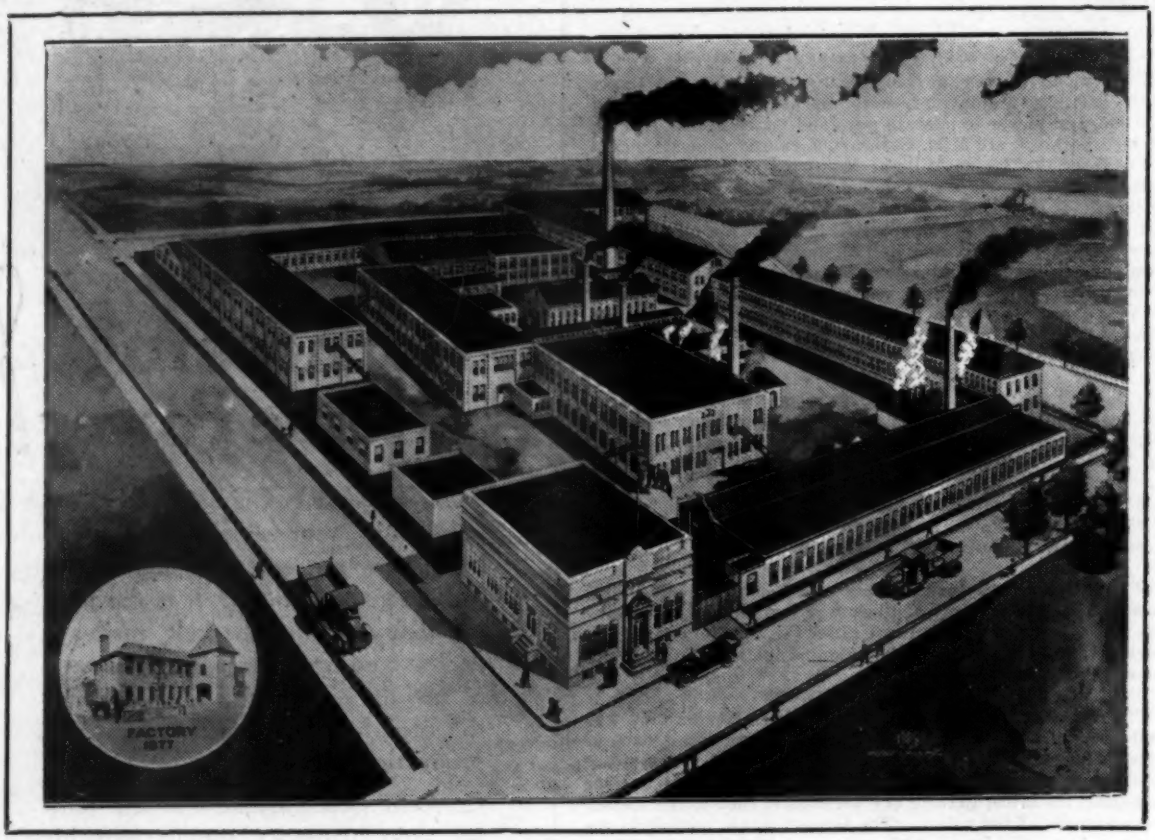

This Illustration Visualizes Forty-six Years of Progressive Growth and Unsurpassed Achievements in the Production of

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WIRES

EASTWOOD WIRE MANUFACTURING CO., BELLEVILLE N.J. U.S.A.

150 feet, and will be equipped with modern machinery, which will permit of a greatly increased capacity. A new office building is also in course of erection, and is situated directly in front of the present one. The company also has plans for a new 50,000-gallon steel water tower, to be erected on steel framework. The present tank will be removed.

Business Agent Riley, of the International Association of Machinists, reports signing new wage agreement with the Lincoln Pulp & Paper Company, of Merritton. The papermakers, pulp and sulphite workers and firemen and oilers are also parties to the agreement, which covers 250 employees. The new agreement provides for the closed shop, and a minimum rate of 70 cents for machinists and millwrights and the 50-hour week, with time and a half for all overtime. The agreement is for one year.

Lincoln Pulp & Paper Company, Merritton, recently installed a new Cottrell four-color press in their flour-sack department. The company report that this branch of their business has been developing rapidly, and that their flour sacks are meeting with ready sale among the millers of the Dominion.

The 100-acre site of the new plant of Thunder Bay Paper Company, Bear Point, Fort William, is the scene of much activity these days. Two hundred men are working on the construction and are busy erecting a new sulphite mill, and bricklayers are laying brick on the new paper-machine building.

P. B. Wilson, vice-president of the Spanish River Pulp & Paper Mills, and Mrs. Wilson have returned from a two months' trip to England and the Continent.

Congratulations of many friends in the paper and stationery trade were recently extended to John T. Hornibrook, secretary-treasurer of Brown Bros., paper dealers and wholesale stationers, Toronto, on the occasion of his 77th anniversary. Mr. Hornibrook has been connected with Brown Bros. for over half a century and despite his advancing years he still enjoys good health.

Ernest Bell, employed as a third hand on a newsprint machine at the Fort William Paper Company's mill, at Fort William, was killed recently when he was caught in a swiftly-moving felt and carried to one of the presses. The accident occurred when Bell was watering the felt.

Doings at the Abitibi Mill

A great effort was made to have June a "no-accident" month, and the first two weeks went by without a single lost-time accident. During the third week, however, there were three accidents, two in the paper mill and one in the grinder room, involving a total loss of time of about 75 hours.

The new oil-burning boat for the Abitibi lakes, the "L. R. Wilson," was launched on Saturday, June 12th, at Low Bush. She was built by the Port Arthur Shipbuilding Co., of Port Arthur, and shipped on a sixty-foot flat car to Low Bush where cradle and ways were built for launching. The boat will do a certain amount of towing, but her chief duty will be to maintain supplies in the various camps. In addition to her other equipment, she carries a full fire-fighting equipment of portable gas pumps, hose, shovels, mattocks, etc., and in an emergency can carry eighty men to the nearest point to the fire.

The new nine-hole golf course was opened last month, when most of the members played at least once around.

Gilbert Jonson, representing the Stora Paper Mills, manufacturers of newsprint in Sweden, was in Iroquois Falls for a couple of days, looking over the mill.

The efficiency of mill operations are being improved daily, and new records are hardly hung up before they are broken. A short time ago the paper mill crew turned out 552.5 tons in twenty-four hours, going one ton better than the record established shortly before and which was celebrated by a banquet offered by the management to all the employees in the mill.

2,000,000 lbs. of paper passed over this felt

Oakite Service Men, cleaning specialists, are located at

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*Grand Rapids
Harrisburg
Hartford
*Indianapolis
Jacksonville, Fla.
*Kansas City
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*Milwaukee
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FOUR weeks is generally considered fair average service for any good felt. Five and six weeks' service is exceptional. But here is a felt that lasted SEVEN WEEKS. In all, 2,000,000 lbs. of paper passed over it.

A truly remarkable performance! And all brought about by washing the felt the Oakite way.

Oakite CLEANS THOROUGHLY. It does not weaken the fibres of the felt and rinses easily and completely. All these advantages make felts last longer. Write us for further information — our service men are anxious to suggest ways to lower your felt cleaning costs. No obligation, of course.

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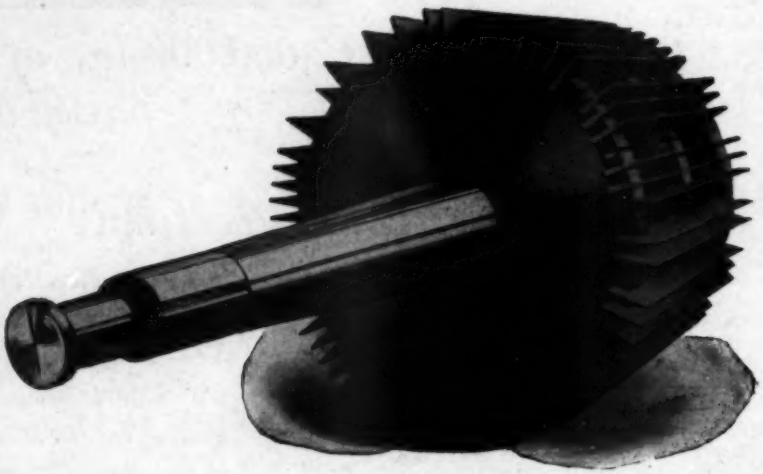

We emphasized the above words "worn out" because with the Downingtown Roll, maximum service is obtained from flybars. Should a flybar be injured it can be removed without affecting those next to it. Then if it cannot be straightened and used again, a new bar is easily inserted without removing the roll from the lighters.

No keys, wedges, bolts and nuts, bands or fusible metals are used to secure the flybars in Downingtown Bandless Beater Rolls. Instead they are held in milled dovetail slots by milled dovetail lugs integral with bar.

A Few Users

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Ruberoid Company, Joliet, Ill.
Barrett Mfg. Company, Elizabeth, N. J.
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Hinde & Dauch Co., Sandusky, Ohio.

Why not send us one of your old rolls of the banded or bandless type and let us rebuild it into our type of Bandless Roll?

DOWNINGTOWN MANUFACTURING COMPANY
Paper and Pulp Mill Machinery
EAST DOWNINGTOWN, PA., U.S.A.

BRITISH COLUMBIA

Owing to the regrettable death of the late Norman Russel Lang, formerly managing director of the Powell River Company, the following executive appointments have been made by the board of directors of the company: L. D. Brooks, executive vice-president; A. E. McMaster, general manager.

Mr. Lang's will has been admitted to probate in the Supreme Court at Vancouver. The estate amounts to more than three-quarters of a million dollars; and as the deceased died intestate, his wife, son and daughter will share equally in the estate.

J. J. Herb, formerly of Thorold, Ont., and now head of the Westminster Paper Mills, Ltd., manufacturers of lightweight papers at New Westminster, recently paid a visit to the Niagara peninsula, where he was the guest of T. A. Weldon, of the Provincial Paper Mills, Ltd. Mr. Herb reported that business conditions in the West are gradually improving.

According to a recent announcement by Lawrence Killam, president of the British Columbia Pulp and Paper Mills, the company are carrying out investigations on the utilization of hemlock cellulose; and if their experiments are successful it is their intention to double or treble the size of their mill.

Rayon Plant for the West Coast

The largest corporation in British Columbia for many months was made recently when the Canadian Rayon Pulp Company was organized, with an authorized capitalization of $2,825,000. The company are losing no time in getting down to business in connection with the construction of a big plant on Poplar Island. They have taken over the premises of the Westminster Trust Block, New Westminster, which are being fitted up as offices by the organization until the first unit of the factory is completed. The president of the company is Sumner M. Bump, who has been for some time a resident of California, and the secretary-treasurer is J. W. Schoonover, who is now residing in New Westminster. The residents recently approved of a by-law in connection with the company and a site on Poplar Island.

The work of installing the machinery in the new plant of the Canadian Scottish Paper Mills, at New Westminster, commenced last month. Two carloads of machinery are already on the ground, and two more are on the way from the East.

Construction work on the extension to the pulp and paper mills of the Powell River Company is virtually complete, except for some minor finishing touches, such as miscellaneous concrete patching, painting, the installation of various steam, stock and other piping. The work of the Chas. Walmsley Company in connection with the installation of the paper machines is progressing steadily, one of them, No. 5, being almost ready for operation. A representative of the Harland Engineering Company is superintending the installation of the Harland Interlock Sectional Electric Drives, one of which was ordered for each of the two new machines.

NEW BRUNSWICK

Many Improvements in Nashwaak Mill

According to Charles Gordon, vice-president of the Nashwaak Pulp and Paper Co., with mills at St. John, the company have doubled their screen capacity, and are now screening their pulp over twice in order to eliminate all spots and dirt in their product. They have installed a new and complete Jenssen Acid System, including acid tower and filters, and have made many other improvements. During the past year and a half, the company have spent a million and a half dollars on the mill.

Photo shows a REEVES Transmission which operates a 79-roll loft drier at the Gilbert Paper Co., Menasha, Wis.

Accurate Control for Uniform Production

ANYTHING from tissue to wrapping paper can be made on machines driven by the REEVES Variable Speed Transmission, and each grade of stock will be uniformly high-grade. The REEVES gives the fine, steady, accurate gradations of speed which enables you to run your machinery at just the right speed always for any different weight.

On fourdrinier and cylinder machines, on cutters, winders, slitters, and on pasting machines, the REEVES Transmission will eliminate waste and increase your production efficiency. Our catalog A-66 gives full information about the uses and advantages of the REEVES in the paper industry. Write for it today.

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Established 1887
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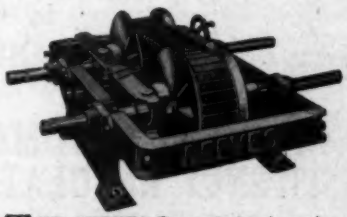

THE REEVES Transmission is a simple, compact mechanical device which receives power at a constant speed and delivers it at any speed desired to any machine or group. It will maintain one set speed indefinitely, or may be changed instantly to meet any different operating condition. Accurate and dependable, always.

REEVES
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Clean Wood for Clean Pulp

This can be accomplished by use of J. & C. Rossers

The accompanying views are of actual operations where our Rossers were in use.

Wood rossed by our Rossers retains its original shape.

Recent installations—
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Eastern Mfg. Co.
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Manufactured and Sold in Canada by
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Hungerford Filters
for
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for
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The company sent their general manager, Howard E. Beedy, to visit sulphite mills in Germany, Norway and Sweden in search of new manufacturing methods and practice before making their improvements.

Improvements at St. George

Under the direction of Edward Wright, who recently resigned as general manager of the St. George Pulp and Paper Co., operating a pulp mill at St. George, a number of improvements were made at St. George. Plans were also made by Mr. Wright for a paper mill to be operated in conjunction with the pulp mill.

General Manager Charlton has taken over the position relinquished by Mr. Wright, but nothing has been announced in connection with the building of a paper mill at St. George. All the pulp produced is shipped to the paper mill of the company at Norwalk, Conn., by schooners.

It has been announced that the extensive lumber properties, including the mills, of the Sinclair Brothers in Northumberland county will be taken over by the Fraser Companies. The transfer will not be made for some time, probably early next year, and the amount involved in the transfer has not been made public.

It is stated that the Fraser Companies, of Edmundston, will not start operations in connection with the erection of their proposed pulp and paper mill on the Restigouche River until next year.

H. G. Acres, of Toronto, who will supervise the development of the hydro operations at Grand Falls, for International Paper Co., will be assisted by A. C. D. Blanchard, who until June 1 was attached to the engineering staff of the New Brunswick Electric Power Commission. Mr. Acres has had close connection with the development of power at Grand Falls, as consulting engineer of the New Brunswick Electric Power Commission, which initiated the Grand Falls development.

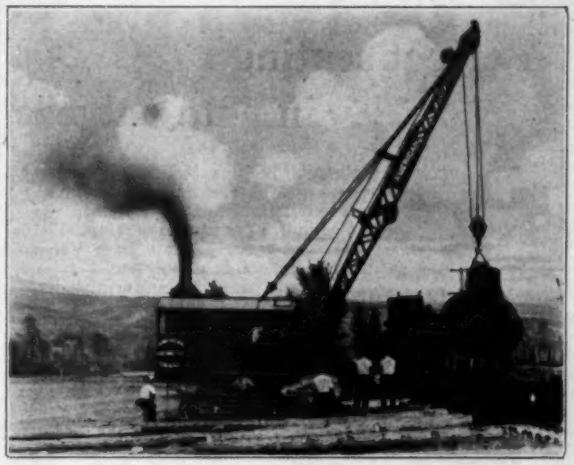
Angus McLean, president and general manager of the Bathurst Co., Ltd., was recently elected a member of the executive of the Maritime Provinces branch of the Canadian Manufacturers' Association, and also a representative of the branch on the executive council of the C. M. A. Mr. McLean is a past president of the Canadian Manufacturers' Association, and has been vitally interested in the affairs of the organization for many years.

The announcement by A. R. Graustein, president of International Paper, that preference will be given to residents of New Brunswick in connection with the company's projects at Grand Falls and elsewhere in the province, will aid in preventing an influx from other provinces and states. Persons interested in the question had feared that labor would be imported from Maine and other states in New England in the development of the power at Grand Falls and in the building of the pulp and paper mills of the company on the St. John River, probably between Woodstock and Fredericton.

The incorporation of two holding companies, each capitalized at $1,000,000, and with Keswick as head offices, is rumored to involve the financing of the Fraser Companies. The first to be incorporated was the Aberdeen Investments, Ltd., while the second was the Gordon Investments, Ltd., with three Fredericton attorneys as incorporators, including R. B. Hanson, M. P. When questioned concerning the identities of those responsible for the incorporations, one of the incorporators declined to make a statement, either in confirmation or denial of the report that the incorporations were a part of the financing of the Fraser Companies.

Joint Commission Favors Power Lease

The International Joint Commission has recommended that an order be issued granting to the St. John River Power Co. the right to construct and maintain a power project at Grand Falls, in the St. John River. The order has gone from the



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WHEN you buy an "AMERICAN" Ten-Ton Crane on Continuous Chain Treads you get a three-in-one combination that is hard to beat. With an extra shovel boom to supplement the regular crane or log handling boom you can change the machine to a powerful, efficient shovel in just a few minutes. Equipped with the crane boom it is particularly fast and accurate with a clamshell bucket; equipped with a set of pile driver leads it becomes a rapid, reliable driver.

The "AMERICAN" Continuous Chain Tread Traveling Mechanism is much more rugged than the usual crawler type traveling mechanism. The tread frames are steel with bronze bushed main bearings and the chain treads are hard grade steel castings with hardened steel pins. Ten and twenty-five-ton "AMERICAN" Machines mounted on these improved crawler type treads and used on a large water supply contract were able to work and travel effectively where other makes failed.

This machine will grade for logging, load, unload and stack pulp logs at the mill, unload coal, machinery and other materials; save money at every turn—10-ton capacity as a crane, ⅞ yard as a power shovel. Complete information on request. Can be had for steam or gasoline operation. Write for descriptive booklet.

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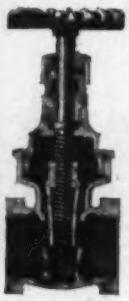

Fig. 370 Screwed Jenkins Standard Bronze Gate Valve

When a Jenkins Valve is partially open, guides are cast in the body, prevent chattering. They keep the valve in line for perfect seating. The wedge of every Jenkins Gate Valve is of the solid, double-faced type. The metal used is uniformly distributed throughout the valve, so that there are no weak points.

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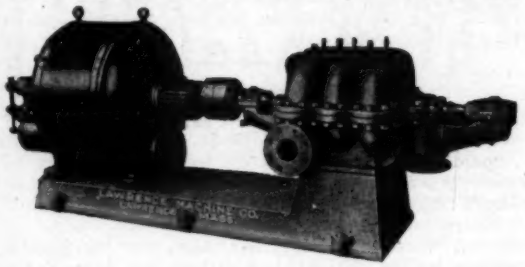

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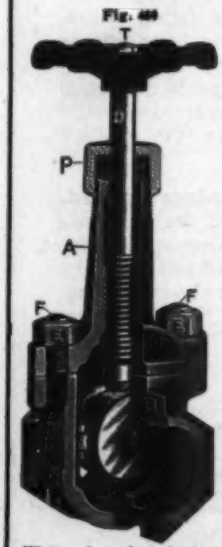
"Pilot" Gate Valves



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Economical and Reliable

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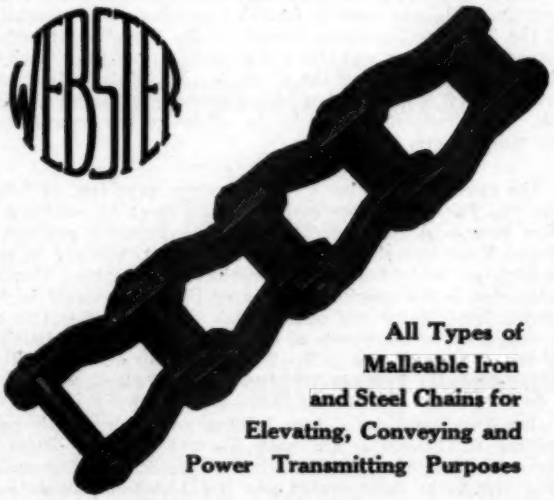
WEBSTER



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Catalog on request.

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commission to the Canadian and United States governments.

The action of the commission is a sequence of its action a year ago in granting the right to the New Brunswick Electric Power Commission to construct and maintain such a project. Since then, the New Brunswick Electric Power Commission has turned over its rights to the St. John River Power Co., and the commission has decided to grant that company substantially the same rights as those made to the N. B. Electric Power Commission.

International Paper Co. will pay the Province $350,000 for the spur line railway running to the power house site at Grand Falls, and for the engineering plans and data in connection with the Grand Falls development, which the New Brunswick Electric Power Commission had completed in preparation for proceeding with the project.

According to Angus MacLean, president of the Bathurst Co., all logs driven by the company this year will be manufactured into pulp, and subsequently into paper.

MANITOBA

Original plans for the pulp and paper mill which will be erected at St. Boniface, are being enlarged. The plant will be made one of the biggest of its kind in the Dominion, according to information recently received at Winnipeg. The mill will be located on the banks of the Seine River. Eastern United States capitalists are at the back of the enterprise, and it is understood that S. Weiner has retired from the board of managers.

NOVA SCOTIA

Frank J. D. Barnjum, member of the provincial assembly for Queen's County, who publicly announced on the eve of the general elections a year ago that if within a year of his election a five million dollar pulp and paper mill was not in course of erection at or near Liverpool, in his county, he would resign his seat, has taken steps to carry out his intention, the promised mill not having materialized. A few days ago Premier Rhodes said that he had received a letter from Mr. Barnjum expressing a desire to resign.

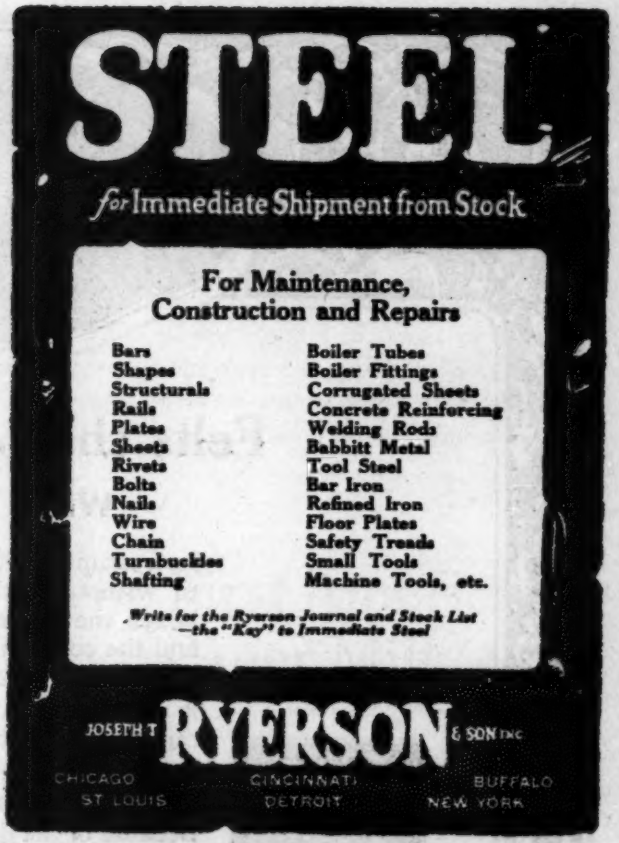
Caledonia Mills Destroyed by Fire

The entire plant of the Caledonia Pulp Mills was destroyed by fire last month, resulting in a loss estimated at between $75,000 and $100,000. Originating in a shed, the flames fed on 2,000 tons of dry pulp stored there, and in a few minutes the building was ablaze. From the shed the fire spread to the mill, the machine shop, the engine room and the boiler room, all of which were destroyed.

The Caledonia mill was the only pulp mill in Queen's County and its destruction throws twenty-five men out of employment. It was a subsidiary of the Scott Paper Co., of Chester, Pa., and the pulp it manufactured was all shipped to Chester.

Special Number of Papier-Fabrikant

A special convention number of Der Papier-Fabrikant, of Berlin, has been issued, containing reproductions of papers presented at meetings of the Association of Cellulose and Paper Chemists and Engineers at Goethen and the Association of German Papermakers and Paper Merchants in Duesseldorf. It comprises a volume of 250 pages, with contributions by Prof. Dr. Carl G. Schwalbe, Dr. Arthur St. Klein, Dr.-Ing. Wilhelm Stiel, Prof. R. O. Herzog, Engineer Fritz Hoyer, Eric Oeman, Dr. Walter Brecht and Louis Paoli, all in the German language. A list of sources of supply, giving the equivalent German, English, French and Spanish names of the mill supplies and equipment advertised in the number, is a useful feature of the publication, which is obtainable at RM. 2.50 from the publishers, Otto Elsner Verlagsges. m.b.H., Berlin S42.



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This valve will not stick —scale doesn't bother it— it is always reliable and silent. You can test its operation easily by hand, and as often as you like.
Send for the Davis Catalog with complete information on the full line of Davis Valve Specialties.
The Davis Stop and Check Valve permits steam to flow from boiler to header, but closes automatically should the flow be reversed. Made in globe and angle patterns, for pressures up to 350 lbs., and total temperatures to 800 degrees. Sizes 2 to 12 inches.
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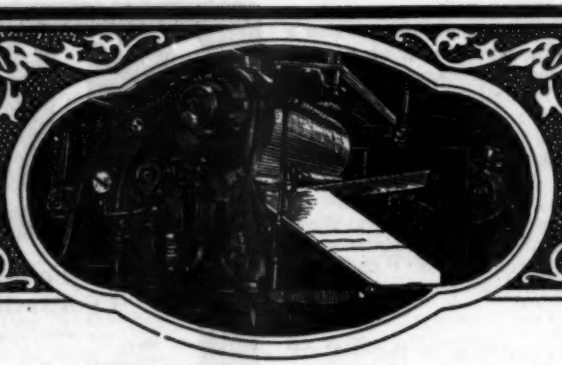
STEAM-SAVERS SINCE 1875
P17-Gray



Felts that combine toughness with water removal

Low maintenance demands a felt that is tough enough to withstand the wear of friction against suction boxes, the tons of pressure at the nip of the press rolls, and the constant pull of the load.

Economical production, however, demands a felt that is absorbent enough to remove water and continue to remove it over the longest period of time.

To combine them, diametrically as they are—that is the test of a felt maker.

Because of the three generations of felt making experience behind Hamilton Felts, you secure in them the perfect combination of toughness that means long life and low maintenance, and water removal qualities that insure profit making production costs.

But to paraphrase the old saw, "the proof of the felt is in the use thereof." You can easily prove the superiority of Hamilton Felts to your own satisfaction by trying them out. Try them once and you'll use them always.

Hamilton Felts are marked by two blue lines full width of the felt and by one shorter blue line midway between them.

Talk with a Hamilton Felt Man about your felt problems. His experience is at your disposal. There is a Hamilton felt for every need in paper production.

SHULER & BENNINGHOFEN, Hamilton, Ohio

THE MIAMI WOOLEN MILLS **Founded 1858**

Hamilton Felts

PACIFIC COAST NEWS

Definite Move for Mill in Alaska

In the interest of extensive development of the paper pulp business in Alaska, a party, including two of the foremost publishers of the Pacific Coast, two engineers and a government representative of the forest service, sailed May 29 for Alaska. The journey is believed to be the first definite move towards establishment in Alaska of a paper producing plant of consequence.

The party is headed by Bart Thane, one of the best known Alaskan mining men of the coast, representative of the Alaska Gastineau Gold Mining Company. George Cameron, publisher of the San Francisco Chronicle, and Harry Chandler, publisher of the Los Angeles Times, are members of the party, primarily in the interest of procuring for their publications a definite source of newsprint. Cameron represents the Crocker interests of San Francisco.

B. F. Heintzleman, assistant United States forester, with headquarters at Juneau, is returning with the party. He is making a survey for the government regarding the supply of pulp timber. H. S. Taylor, engineer associated in the past with some of the largest paper producing interests in the country, will look over the field for Eastern interests.

Heintzleman's analysis of the Alaskan pulp possibilities indicate there is timber enough to supply 1,000,000 tons of paper annually and leave enough for reforestation. The timber would be sold by the government to the paper industry on the stumpage or cordage basis.

Thane is also interested in hydro-electric possibilities. The Alaska Gastineau Gold Mining Company, near Juneau, has already developed 10,000 horsepower not now in use. This power is produced by two units. An additional 6,000 could be developed here. It is stated there is more than 500,000 horsepower in Southeastern Alaska. With a production of 16,000 horsepower, production of 225 tons of paper daily would be possible.

There is now operating a plant at Ocean Falls, B. C., which is producing 200 tons daily. This plant cost approximately $6,000,000. The Juneau development would exceed the Ocean Falls outlay, it is believed.

One groundwood mill is now located in Alaska and supplies about twenty tons daily to mills at Port Angeles.

First mortgage six per cent serial gold bonds of the Oregon Pulp & Paper Co., of Salem, Ore., are being offered to investors by a group of banking firms headed by the Lumbermen's Trust Company and including the Minnesota Loan and Trust Company, the First National Bank of Seattle, the National Bank of Commerce, Seattle, and Dean Witter & Company. The issue is dated May 1, 1926, due serially May 1, 1927 to 1941, and the bonds are priced according to maturities or to yield from 5.50 to 6.10 per cent. Amount of the issue is $1,000,000 and the bonds are in denominations of $1,000, $500 and $100. The company manufactures various kinds of high grade papers at Salem, Ore. The bond issue is secured by a first mortgage on all the company's fixed properties.

Work on the big paper mill at Shelton, Wash., for the Rainier Pulp & Paper Company started June 17. Workers are now ready to start driving of 4,000 piles as foundation for the structure. The concrete building will be almost 1,500 feet long and 110 feet wide. Ultimately construction costs for the complete plant are expected to reach the $2,000,000 figure.

It is reported that R. T. Thomas, president of Thomas Laboratory, 312 N. 23rd St., Portland, Ore., is interested in plans for the erection of two mills, one to be erected at Wheeler, Ore., on the property of the Westwood Lumber Co., and the other to be established at Lake, Miss., on the property of the DuBois property. Mr. Thomas will spend the summer at Lake, Miss., completing demonstrations on pulp made from Loblolly Pine and Tupelo Gum, with a view of ascertaining the best grades of paper suitable for manufacture from these woods.

Pioneers in Paper Making

ELIEVING it will interest our friends to know something of the pioneer paper makers of America, brief notes of the earliest paper mills in different parts of the country will be recorded below from month to month.

The First American Paper Mill

The founding of America's first paper mill was due principally to the enterprise of William Rittenhouse, a German paper maker, and William Bradford, an English printer.

In 1690 they erected a mill on Paper Mill Run, a small stream that empties into Wissahickon Creek at Germantown, Philadelphia. Rittenhouse shortly became the sole proprietor and carried on the business until his death in 1708, when he was succeeded by his son Claus, who became the second paper mill proprietor of the Colonies.

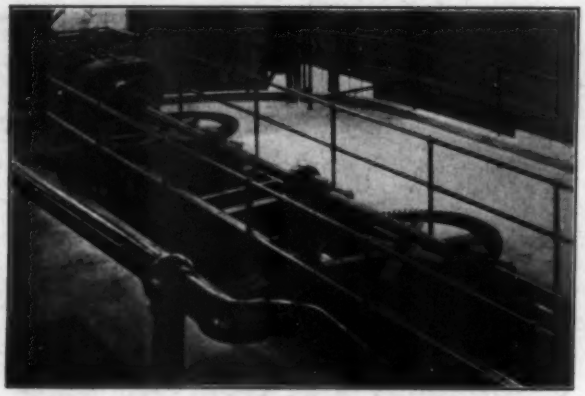
Established 1842

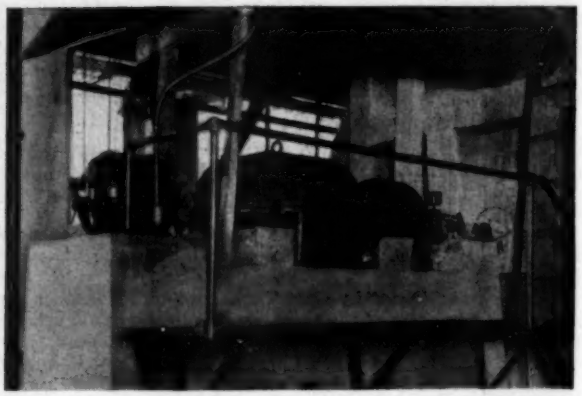
Cheney Bigelow Wire Works

Experienced and Progressive

Fourdrinier and Cylinder Wires
Dandy Rolls and Cylinder Moulds
made and recovered

SPRINGFIELD, MASSACHUSETTS





A Speed Reducer of Exceptional Merit

Prominent engineers are specifying Palmer-Bee Mill Type Speed Reducers because they like their extreme simplicity of design, ruggedness of construction, accessibility of mechanism and high efficiency.

Immunity to detrimental atmospheric conditions, which shorten the life of exposed drives, ability to operate for long periods with little attention and to "stand the gaff" of severe, continuous service indefinitely—these are other factors that explain the high estimation in which Palmer-Bee Reducers are held by practical engineers in leading mills and factories everywhere.

These advantages and superiorities are made possible by a design far in advance of contemporary speed reducer construction which comprehends the use of:

Extra wide-faced, coarse-pitch, hobbed cut spur gears mounted on heavy thru shafts supported in bearings at both ends;

A sturdy cast iron casing, split horizontally to allow accessibility to the mechanism;

A patented lubrication system which reduces wear to a minimum by covering all friction surfaces with a protecting cushion of oil.

A brief examination will convince you that the Palmer-Bee is a reducer of exceptional merit. Bulletin 145 tells all about it. Write for a copy NOW.

PALMER-BEE COMPANY
Detroit, Michigan

"World's Largest Producers Use P-B Reducers"

Palmer-Bee Speed Reducers

TRADE MILL REG. U.S. P-B MARK TYPE PAT. OFFICE.

NORTHERN NEW YORK NEWS

Resume Making Pulp Grinders

Manufacture of pulp grinding stones by a secret process for use in paper mills has been resumed in Ogdensburg, a local syndicate having been formed to finance the project in its initial stages. The business was formerly carried on by the Walker Pulpstone Co., which was liquidated some time ago. The new interests have taken over the equipment and will add new machinery. Materials were ordered some time ago.

William Kerr, who was superintendent of the Walker plant when it was in operation, has been engaged to take charge of the work. Those interested in the project and who will finance it are L. F. Cuthbert, R. H. McEwen, H. P. Hannan, H. G. Chandler, John Hannan, Dr. M. J. Stearns, Julius Frank, C. J. Spaulding, J. F. Skelly and Albert P. Newell.

The first stones turned out by the Walker company were satisfactory and the company was making good progress when the war broke out, resulting in an embargo being placed by the British upon materials which the company obtained from England. The company subsequently discontinued operations owing to the inability to obtain the ingredients which were used in the process. The stones measure 54 by 27 inches and are of a very hard and durable nature. The original ones made by the Walkers are said to have been superior to grinders made from solid stone.

Several Mill Accidents

The past month has been a singularly unfortunate one for employees of paper mills in Northern New York. Albert LaTray, 34, an electrician employed by the St. Regis Paper Co. at its Deferiet mill, was instantly killed on the morning of June 18, when he came in contact with a high powered wire. LaTray was engaged in installing a new power wire from the power house to the pulp conveyors.

A few hours later Frank McTaggart, for 15 years an employee of the St. Regis mill, was drawn between the rolls of a paper machine and was instantly killed. There were no witnesses to the accident.

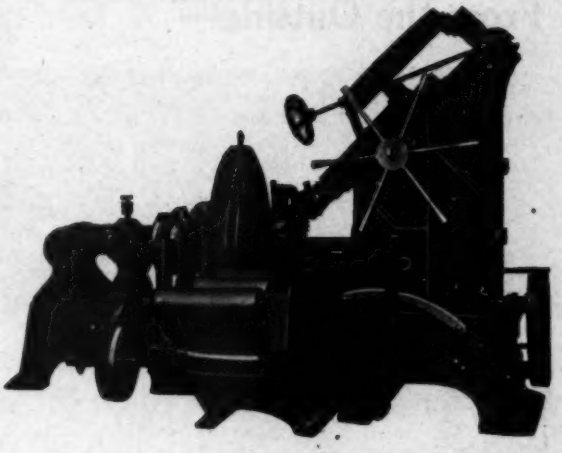
On June 15, Charles H. Hall, 57, foreman of the Gould Paper Co. mill at Gouldtown, was killed when an emery wheel over which he was working, burst. A fragment struck him in the head, fracturing his skull. He died a few hours later. Mr. Hall had been employed by the Gould Paper Co. for the past ten years and prior to that time he worked in the Moyer & Pratt mill at Lyonsdale.

Linus Gates, yard boss of the West End Paper Co. of Carthage, was killed on the morning of June 12. A coal car had been run on the trestle and Gates with a heavy wrench was engaged in loosening the mechanism which caused the car to dump its load. The wrench slipped and struck him on his head. His injuries were not believed serious but his condition continued to grow worse and he was removed to a Watertown hospital, where it was found that he was suffering from a fractured skull. His death took place a short time later. Mr. Gates, who was 43 years old, had been employed by the paper company for a number of years.

James McGowan, an employee of the St. Regis Paper Co. at its Norfolk mill was badly burned when a pipe on a digester burst, showering him with acid. He will recover.

George Dillenbeck, an employee of the Brownville Board Co., lost the index finger of his left hand when it was caught in a machine.

The increase in the number of shares of common stock of the Taggart Brothers Co., Inc., has been authorized. The company operates a mill in Watertown. The company, originally capitalized with its shares of stock fixed at 110,000 shares, is authorized to increase the number to 210,000, the preferred stock remaining at 10,000 shares, having a par value of $100, while the common stock is increased to 200,000 shares of no par value. The papers filed with the secretary of state bear the signatures of B. B. Taggart, J. W. Taggart, J. F. Amos, R. H. Amos, K. Gallinger, Floyd L. Carlisle, F. L.



A New Barker

Built to cut down waste and increase production, this barker offers you these features:

Knives are adjustable
Ball bearing mounted cutting head
Eight knives
Minimum upkeep

The only knife barker with adjustable knife head features. Built heavy, rigid. Capacity 2 inch to 12 inch diameter—wood in 2 or 4-foot lengths—18 to 20 cords per day (10 hours). *Produces clean wood with a minimum waste.*

This new barker is a piece of equipment every pulp mill needs for efficient production.

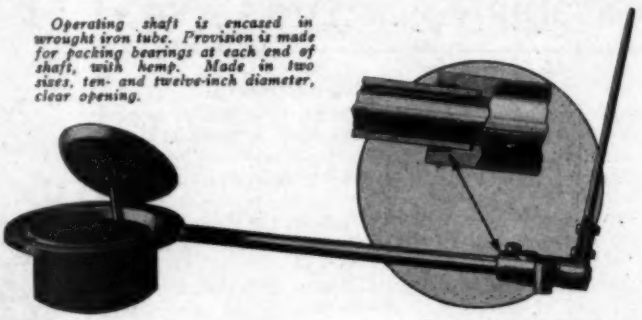
GREEN BAY BARKER CO.
Green Bay, Wis.
Makers of the famous Barker-International Pulp Screen

From the Outside—

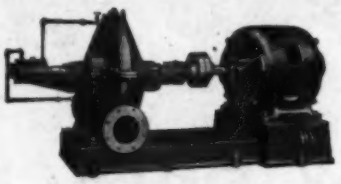
No "fishing" and "poking" around the inside of the beater tub. This new dumping valve is constructed to operate **from the outside** of the tub. May be made either right or left hand by simply reversing two small bronze bushings.

Brass valve seat and lid are correctly proportioned. The valve in general is durable, easily operated and installed, and is positive in action.

Operating shaft is encased in wrought iron tube. Provision is made for packing bearings at each end of shaft, with hemp. Made in two sizes, ten- and twelve-inch diameter, clear opening.



DAYTON GLOBE IRON WORKS, **Dayton, Ohio**



High Efficiency Centrifugal Pumps

We build the latest improved types for every pumping requirement in paper and pulp mills.

Write for Catalog

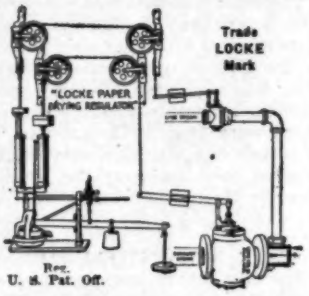
Lawrence Pump & Engine Co.

P. O. Box 708 LAWRENCE, MASS.

LOCKE Paper Drying Regulator

This regulator controls both live and exhaust steam for any purpose where steam is used, or it will control the direct steam when used alone. Is unlike, both in construction and operation, any device that has heretofore been designed for this purpose. Controls not only temperature of the dryers when paper is running over them, but maintains the same temperature whenever there is a break in the paper. This machine is most sensitive to any change in temperature of dryers, yet it has been found to be perfectly reliable and what is more, is not continually getting out of order.

Also manufacturers of other steam specialties.



Reg. U. S. Pat. Off.

Locke Regulator Co., 76 North St., Salem, Mass.

"Locke" Regulator Agency, 30 Cortlandt Street, N. Y. C.

Canadian Representatives: Ponsek Brothers Limited, 1005 Delorimier Ave., Montreal, Can.

PRESSURE PIPE THAT NEVER BURSTS
Built in sizes 1 inch to 40 inches

WYCKOFF WOOD PIPE

The Paper Industry is successfully using thousands of feet of this Pipe and they find it to be the best conveyance for White Water, Paper Stock, and Acids that can be obtained

WRITE TODAY FOR CATALOG AND PRICES

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1855 Elmira, N. Y., U. S. A. 1926

ECONOMIZERS

Foster Preheating and Superheating Surfaces for boilers and industrial processes steady the heating action, prevent overheating, and save fuel by increasing the heating efficiency.

AIR HEATERS

FOSTER

POWER SPECIALTY CO., 111 Broadway, New York

Boston Philadelphia Pittsburgh Cleveland Detroit, Chicago
Kansas City Dallas Denver San Francisco Los Angeles London, Eng.

SUPERHEATERS

The value of Foster Heat Engineering Service and Foster Construction are proven by more than 29 years of experience and over 11,000 installations in every industry and in every type of plant.

WATER WALLS

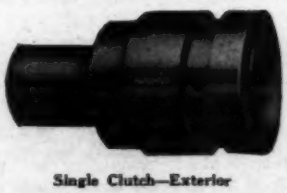
THE JOHNSON FRICTION CLUTCH

Used Nation-Wide on Paper Machines

Single Clutch Pulley Mounted

Johnson Clutches are used nation-wide, yes and well beyond our country's borders—even far-distant Siam has its Johnson Clutches on a government-owned Fourdrinier. Johnsons give splendid service in starting, stopping and controlling paper machines. Their compactness lets them into surprisingly small space. Amazingly powerful and durable. We guarantee satisfactory service and supply expert engineering assistance gratis. Get our illustrated reprints and blue prints. Equip with Johnsons.

Write for Catalog P. I.



Single Clutch—Exterior

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN

Carlisle & Co., Inc., H. E. Machold, A. M. Lofink, C. W. Miller and P. J. Heffron.

Stations on the Delaware & Hudson R. R. are not entitled to lower rates on pulpwood from Boston despite the fact that the rates are considerably higher in proportion to the distance than the rates of Western New York, according to a tentative decision in a report submitted to the Interstate Commerce Commission by Examiner McChord, who conducted a hearing and complaint by the International Paper Co.

The Racquette River Paper Co., of Potsdam, has purchased a 50 h.p. Larrabee truck which will be equipped with a pumping engine with a capacity of 500 gallons a minute. The machine will also have two chemical tanks and will carry 1,200 feet of hose. The company and its affiliated organizations own considerable property at Sissonville, Hewittville, Unionville and contiguous territory which is without fire protection.

Several hundred tons of waste paper in the mill yard of the Carthage Paper Board Co. were destroyed by fire June 18. Firemen were compelled to fight the fire for several hours in order to prevent it from spreading to the mill.

A motor in the sulphite plant of the National Paper Products Co. at Carthage caught fire last month and was destroyed. The fire was prevented from spreading to the mill.

Nearly the entire plant of the Bagley & Sewall Co., manufacturers of paper making machines was temporarily shut down for one day last month as the result of a severe electrical storm. The plant was struck by lightning and the entire 16 power lines were put out of commission. The plant was set on fire but the blaze was extinguished.

Decision has been reserved in the case of the Phoenix Toilet & Paper Manufacturing Co., the Oswego River Paper Co. and the Three Rivers Paper Co. against the village of Phoenix. The complaining paper mills charged that the water commissioners of Phoenix charged them 25 per cent more for water than was charged the users within the limits of the village.

The Arrowhead Mills, Inc., of Fulton, are having their troubles with the city assessors and the company has started a certiorari action. It is claimed by the paper company that the Fulton assessors assessed the mill property at a figure three-quarters of a million dollars in excess of its value.

Norman B. Sprague

Norman B. Sprague, for 53 years an employee of the International Paper Company and its predecessors, died June 29 at his home in Mount Vernon. Mr. Sprague went to Fort Edward in 1874, taking a position as clerk for Bradley & Underwood. That partnership owned the old Fort Edward mill, absorbed in 1892 by the Glens Falls Lumber & Paper Mill Co. and in 1898 by the International Paper Co. Mr. Sprague rose through several positions and 15 years ago he was made assistant general manager of the woodlands department.

The annual report of the St. Regis Paper Co. shows a net income of $1,041,056 in 1925. The net, after preferred dividends, was equal to $2.40 a share earned on the common stock, compared with $1,054,799, equal, after preferred dividends, to $3 a share in 1924. Gross revenue for the year was $9,175,651 and operating income was $1,401,409. Expenses totaled $7,774,242; depreciation was $191,527; taxes and interest, $168,826. Current assets were $5,550,191 against current liabilities of $1,044,919. Current assets consisted in cash $513,000, notes receivable $57,657, accounts receivable $932,476 and inventories $2,614,942.

Frank Case of Watertown, who has been a papermaker at the Hinde-Dauche Paper Company for eight years, has been named night superintendent of the Carthage Pulp & Pasteboard Company.

The Lenix Drive

(Trademark Reg.)

Seven 100 H. P. doub'e headed motors driving beaters. Fourteen Lenixes used.

DURING the past year no fewer than TEN mills were added to the list of paper factories in the United States and Canada using the Lenix drive. The total number is now over SEVENTY.

In the installation illustrated there are seven 100 H. P. double headed motors driving fourteen beaters. Fourteen Lenixes are used. The short pulley centers not only possible, but preferable, with the Lenix have saved considerable floor space.

The Lenix relieves the double headed motor drive, horizontal or vertical, of all disadvantages found when the open drive is used. The tension in each belt of the unit is kept at a point just sufficient to transmit the load without slippage. This is an important point as the belts will not stretch the same and with the Lenix drive it is not necessary to stop both beaters to take up the stretch of one belt.

The Lenix automatically adjusts itself to variations in the load. Maximum efficiency and absolutely independent operation of each beater in the unit is obtained. Send for booklets.

Saving Slippage and Space, and The Lenix Drive in the Paper Industry

See page 467 in the 1925 Paper and Pulp Mill Catalogue

F. L. SMIDTH & CO.

Engineers

50 Church St. New York, N. Y.

Morey Paper Mill Supply Company

99 Chauncy Street BOSTON, MASS.

Vulcan TRADE MARK

DRYER FELTS

BRANDON 3-PLY "TRI-UMPH" AND STANDARD WARP

Deckle Tape and Cutter Webbing—Cotton and Rubber Belting—Enamelled, or Rubber, Fourdrinier Aprons—Rubber Splicing Tissue—Neutral Soap Powder—Dryer Felt Sewing Twine —Superheat Asbestos Packing—Rubber Sheet Packing—Steam and Water Hose "Lambeth" Cotton Transmission Rope

RESILIENT RUBBER ROLLS

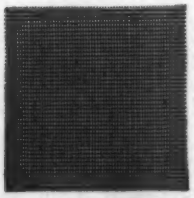
It is the "resilient cushion" and not the softness of the roll that takes the water out and gives maximum felt economy at the same time.

Made by

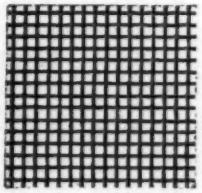
STOWE & WOODWARD COMPANY

The Rubber Roll Makers NEWTON UPPER FALLS, MASSACHUSETTS

FOURDRINIER WIRES



In Brass, Bronze and phosphor bronze, widths up to, and including 250 inches.



Also

CYLINDER FACES
WASHER WIRES
and CORDUROY CLOTH

THE W. S. TYLER COMPANY

Cleveland, Ohio, U. S. A.

NEW YORK CITY NEWS

Bulkley, Dunton Add Rag Department

According to announcement made a few days ago, Bulkley, Dunton & Company, of 75-77 Duane street, New York, have added to their organization a rag and paper stock department to handle the importation and distribution of new and old rags, bagging, old rope and other raw material for paper mills, under the management of James Rosenberg, who heretofore has been identified with the Marx Maier Paper Mill Supply Corporation, of New York, as manager. Bulkley, Dunton & Company have been appointed sole distributors in the United States and Canada for the packings of Marx Maier, of Mannheim, Germany, which formerly have been handled through the George M. Graves Company, Inc., of Boston, and the Marx Maier Paper Mill Supply Corporation, of New York, which concern has been closed with its entire business transferred to Bulkley, Dunton & Company.

Bulkley, Dunton & Company are large importers of and dealers in paper and wood pulp, and are one of the oldest concerns in the trade, having been established in 1833.

I. P. Man Makes Hole in One

While playing over the course of the Belmont Manor Golf Club in Bermuda recently, George E. Smith, manager of the purchasing department of the International Paper Company, of New York, made the sixth hole of 130 yards in one, and thus becomes a candidate for the far-famed Hole-in-One Club. Mr. Smith's partner and two other players on a nearby hole, who happened to witness the shot, described it as a perfect play, the ball falling on the green about 15 feet from the pin and rolling straight into the hole.

Mr. and Mrs. Smith were enjoying a three weeks' vacation in Bermuda at the time. D. F. Williams, vice-president of the Hudson Coal Company, was Mr. Smith's partner, and it was through him that Mr. Smith's friends in the paper trade learned of his remarkable drive.

Howard O. Jensenius, formerly with Nilsen, Lyon & Company, Inc., wood pulp importers of 110 East Forty-second street, New York, is now associated with Daniel M. Hicks, Inc., importers of and dealers in papermakers' supplies, of 200 Fifth avenue, New York, as manager of the wood pulp department of the Hicks' organization. Daniel M. Hicks, Inc., is sole agent in this country for Elof Hannson, of Gothenburg, Sweden, large handler of pulps of all kinds.

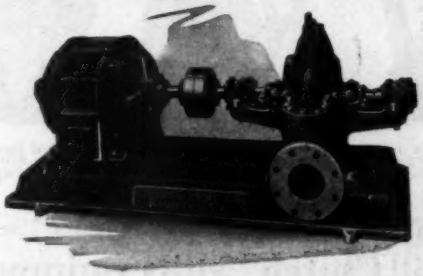
Still on the Job Despite 87 Years

A remarkable man is Robert Gair, head of the big paper board and paper products manufacturing business that bears his name and has plants in several parts of the country. At the ripe old age of 87 years, Mr. Gair continues to run the concern from his desk in the main office in New York, and there is seldom a day he misses being at his office notwithstanding a recent street accident that left his arm paralyzed. Although his physician advised a long layoff from work, Mr. Gair just rested from the shock a little while and then took up the reins of his business again. He has had an electrical machine fitted up in his office, and every morning he sits in a chair treating his paralyzed arm in the warmth of the electric rays. In the afternoon he turns to his work.

"Thank God, they didn't send me to a hospital," he said to an interviewer a few days ago, "for I would be lost if I didn't work. I have worked all my life and I am not going to quit yet." This is characteristic of Mr. Gair. His philosophy on life is summed up in one word—"work!" That is what he would tell all young men who look forward to a successful career, and his own life shows how well he has lived up to his creed. Mr. Gair is proud of his two sons, who have risen in the business through energy and initiative patterned after his own attributes of these qualities. He has built a clinic for his daughter a few steps from his home, and there she treats without charge unfortunate people who need medical assist-

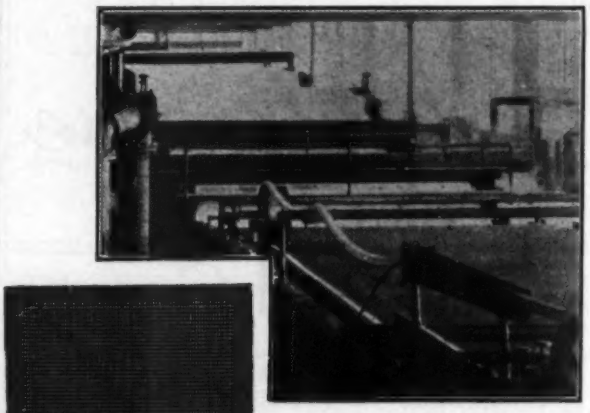
TRADE MARK HI REG. U.S. PAT. OFF.
Ohio Grease
All Kinds of
Exposed Gears
need Ohio Gear Grease for perfect lubrication under all conditions.
Thoroughly lubricates each gear tooth—prevents direct contact—reduces noise and friction, and increases power.
Water or weather will not affect it. Will not harden or dry up. A perfect lubricant for exposed gears under any conditions.
"Stocks Carried in All Principal Cities"
THE OHIO GREASE COMPANY
LOUDONVILLE, OHIO

"Chicago" Pumps



Here is a "Chicago" single stage horizontal pump. It is known as Type "D." Used for House, Booster, Circulating and Fire Duties. Designed to handle any kind of liquid or semi-liquid. Sizes up to 6". Capacities up to 1800 G.P.M. Heads up to 215 pounds. Ask for Bulletin 101.
Multi-stage Pumps for large capacities and high pressures can also be furnished. Ask for Bulletin 103.
Literature Gladly Furnished Upon Request
Chicago Pump Company
Circulating Bilge Fire Sewage House Condensation Vacuum
2318 Wolfram Street Chicago, Illinois

for Long Runs at High or Low Speeds



CABBLE Superior Fourdrinier Wires, because of their toughness and strength, give longer and better service in short or long runs, at either high or low speeds.

Over three-quarters of a century making wire products for the paper industry, has taught us how to make Superior Fourdrinier Wires of a smooth, even mesh that will not groove the suction boxes.

Cabble Superior Fourdrinier Wires are made of phosphor bronze or brass in all lengths, widths and meshes. The seams are made to your requirements. Standard mesh, phosphor bronze or brass wire cloth bearing the "Superior" trade mark will also be found of the highest quality.

The WM. CABBLE
EXCELSIOR WIRE MFG. CO.
80-88 AINSLIE ST. BROOKLYN

"Cleveland Type" Oil Film Bearings

"Smith Type" Hill Friction Clutches

"Industrial Type" Spur Gear Speed Transformers

There's a Reason Why
the Pulp and Paper Mill Industry Use

"Hill Clutch" Mill Equipment

featuring

"Smith Type" Hill Friction Clutches
"Cleveland Type" Oil Film Bearings
"Industrial Type" Spur Gear Speed Transformers
"Steelarm" Automatic Belt Tighteners
Agitator Equipment of All Kinds
Flexible Couplings

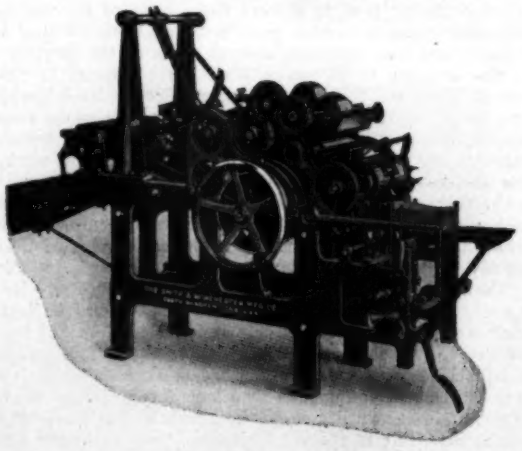
Your wants mean more to us than "so much material." A careful study is made by Engineering Experts skilled in Power Transmission problems. You receive the accumulated experience of "half a century" serving the Pulp and Paper Mill Industry.

The Hill Clutch Machine & Foundry Co.
Power Transmission Engineers
General Office and Plant
Cleveland, Ohio

Established 1828
The
Smith & Winchester Mfg. Co.
SOUTH WINDHAM, CONN.

Manufacturers of

Paper Making Machinery



Paper Bag Making Machinery

ance. Every summer Mr. Gair takes his family out to Long Island. From there he commutes to work every other day, but the rest of the year finds him at his desk every morning.

Carlton B. Overton, of Castle & Overton, Inc., importers of practically every grade of raw material used by paper manufacturers, of 200 Fifth avenue, New York, returned home early in June from a few weeks' business trip to Europe. While abroad Mr. Overton attended an international conference of rag packers and shippers in Brussels, Belgium, as representative of the National Association of Waste Material Dealers, Inc.

Alan Boone Helffrich, New York representative of the Orono Pulp & Paper Company, of Bangor, Me., was married on June 12 to Miss Medora Elizabeth Thompson, daughter of Mr. and Mrs. Walter R. Thompson, of Ebensburg, Pa., the wedding taking place at the home of the bride's parents in Ebensburg. Mr. Helffrich was national half-mile champion runner in 1921 and 1922, and was a member of the victorious American Olympic teams of 1920 and 1924. He was the only American runner to defeat Paavo Nurmi in a scratch race during the Finn's visit to this country last year.

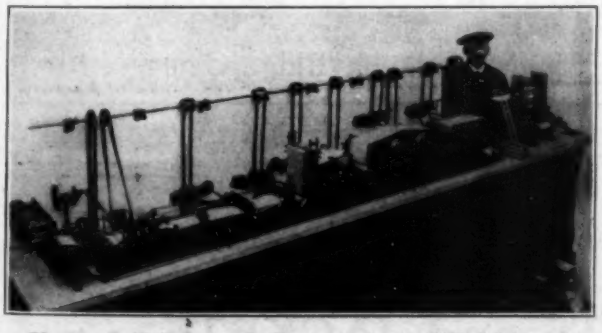
M. C. Parsons, president of the Parsons Trading Company, paper exporters and importers of 110 East Forty-second street, New York, and Mrs. Parsons sailed on the steamer Franconia late in May for England, where they intend to spend five months motoring in their car, which they sent forward previously.

The Cottrell Paper Company, of New York City, was incorporated under New York State laws on June 11 to deal in paper with a capital stock of 1,500 common shares of no par value. B. F. Crowley, E. H. Womack and R. H. Taylor were the incorporators.

The Paper and Allied Trades Mercantile Agency, of New York, was incorporated on June 8 under New York State laws by H. Miller, T. P. Longmore and A. C. Damon. Ridgway, Ridgway & Slote, of 41 Park Row, New York, are attorneys for the new corporation.

Frederick Singer, of Mountain Lakes, N. J., and associates have acquired the former plant of the Singleton Silk Company, of West Dover, N. J., and plan to remodel and improve the structure for a new paper mill. Machinery will be installed at an early date for the production of transparent papers and affiliated specialties. The property was secured for a consideration stated as $50,000. It is proposed to organize a company to carry out the paper mill project.

Makes Paper Four Inches Wide



The H. N. Hill Co., 308 Chestnut street, Philadelphia, Pa., has submitted the above photograph of a miniature paper-making machine which was made in France.

The machine makes a sheet of paper four inches in width, and is only two feet wide by two feet high by nine and one-half feet long. It was begun in 1902 and finished in 1914, taking twelve years to build.

At the Lyons International Exposition the machine was awarded a silver medal.

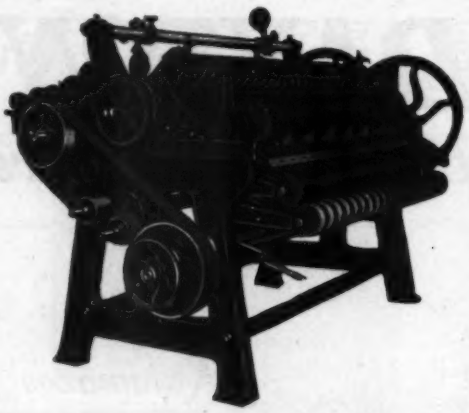
DAYTON
High Speed Beaters

Kalamazoo Again Talks to You

THERE are now seven new Dayton High Speed Beaters in use at The Western Board and Paper Company at Kalamazoo. The original order called for two. They lived up to all advance claims, and another order followed—this time for three. Still later a third order calling for two more came in. The total now stands at seven.

You can sell a man once. After that he buys on performance. It, therefore, stands to reason that Dayton performance is very much in evidence at Kalamazoo. Let us tell you the Dayton story. Write for list of prominent Dayton installations.

We Rest Our Case on Performance
DB & H
The Dayton Beater & Hoist Co.
Dayton, Ohio



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Single—Duplex—Diagonal

CUTTER KNIVES
PATENT TOP SLITTERS

HAMBLET MACHINE CO.
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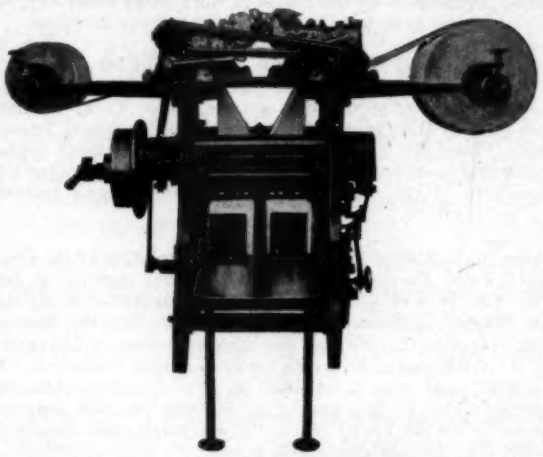

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Adjustable for various size Napkins
Production 500 Napkins per Minute
Machine Ball Bearing Throughout

We also manufacture: Crepe Machines, Collapsing Reel, Rapid Toilet Rewinder, Pneumatic Bundling Press, Drum Winder and Special Machinery.

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GREEN BAY, WIS.
Selling Agents:
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Technical Association Papers, Series VIII (1925)

In paper, 248 pages. $3 per copy

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Chemistry in the Soda Pulp Process
Economy of Lime Reburning
Evaporator Test Code for Soda Mills
Preliminary Impregnation of Wood
Strength Test for Chemical Pulp
Sulphite Waste Liquor as Fuel
Use of Decayed Wood for Bleached Chemical Pulp

MECHANICAL OPERATION
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Burning of Wood Refuse
Moisture Meter and Its Use in Water Removal
Ruths' Steam Accumulator
Steam Prime Movers for Paper Mills
Ventilation of Paper Machine Rooms

MECHANICAL PULP
Norton's Segmental Pulpstone
Refiners for Groundwood Tailings

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Bureau of Standards and the Weller Brittleness Test
Extractor and Cleaner for Carbon Paper
Pulp Weight Factors for Microscopical Analysis
Relation of Paper Furnish to Paper Tests
Stains for Microscopical Analysis
Study of the Mullen Tester
Test for the Liquid Permeability of Paper
Tests at Various Relative Humidities
Use of the Glarimeter for Paper Finish

WASTE
Burning of Wood Refuse
Economy of Lime Reburning
Uses of Carbon Recovered from Black Ash
White Water and Stream Pollution
White Water Utilization Code

MISCELLANEOUS
Baryta Paper
Bibliography of Paper Making for 1924
Effect of Acetic Acid on Animal Silus
Notes on China Clay
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Tendick's Rosin Size Color Test

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FELTS and JACKETS

Top and Bottom Wet Felts for board machines, with all the qualities requisite to insure long life and continuous production.

They Satisfy

NEW ENGLAND NEWS

A. W. P. Co. Sells Mills

By far and away the outstanding piece of New England news this month of national interest is the statement that the American Writing Paper Co. has been showing black ink figures for the past year's operations, followed by the equally and related announcement of the reorganization plan for only by the assurance of the first could the second become a fact.

That the stockholders and certainly the bondholders of A. W. P. Co., are to eventually have a corporation whose securities will be backed by sound financial value becomes more apparent, and it is equally clear that it is of utmost importance that the beneficent regime of Sidney L. Wilson be continued indefinitely.

In connection with the reorganization, it is of first importance to learn that the company will eventually comprise 16 mills which means the elimination of 12 plants, two of which have already been disposed of—those at Harding and Excello, Ohio. The others to go are the Chester division at Huntington, Mass., the Hurlburt division at South Lee, Mass., the Oakland division at Manchester, Conn., the Shattuck and Babcock division at De Pere, Wisconsin, the Agawam mills at Mittineague, Mass., and the Riverside Mills No. 1 and 3 in Holyoke itself. This will give the company but one important unit outside of Holyoke, the Windsor Locks division producing high grade folding box boards and as it has been a consistent earner through good times and bad, it will unquestionably form a link in the A. W. P. chain indefinitely.

The Mittineague mill has already been abandoned and the 100 or so employees are compelled to seek employment elsewhere though the company is providing for them in Holyoke as best it can and has retained all the foremen and the veteran superintendent, Harry Mendum who has been at the Agauam mill for 28 years during which period the Agauam mill has turned out some of the finest writing papers made anywhere. It produced a general line of stock which will more economically be handled at Holyoke.

The two Riverside mills slated for sale have been idle for some months. President Willson estimates that the sale of these plants will bring $1,400,000 at sale though they have a depreciated book value in excess of $3,000,000. Their disposal will save the company $300,000 net annually.

The Federal Government gave impetus to the reorganization proceedings by settling with the company for its unpaid income taxes from 1917 to 1920, with a rebate of $1,250,000, leaving but $284,000 to be paid. Insistence by the Treasury Department on this original sum would have seriously embarrassed the reorganization.

Meantime creditors are to get what appears to be a fair settlement. Those whose claims are unsecured are to receive 10 per cent in cash and 90 per cent in preferred stock which should have some market value immediately. The secured creditors would get 50 per cent cash and 50 per cent in serial notes. The unsecured claims are largely those of paper stock dealers, chemical concerns and other mill supply merchants and manufacturers.

The first mortgage bondholders whose representatives, the Old Colony Trust Co., of Boston, were the instigators of the receivership are to get 50 per cent in new bonds and $680 in new preferred. The present stockholders are the ones expected to supply new capital. The present preferred stock is to be assessed $10 per share and will get 5 shares of new preferred, $500 of new first mortgage bonds and sixty shares of new common. The common shareholders must pay $5 to participate in the reorganized company, for which they will receive $250 in bonds and common stock to the amount of 25 shares.

Incidentally a substantial part of the revenue derived is to be used to renovating the mills and adding new machinery. It is expected that $1,250,000 is to be spent on reconditioning during the next two years.

It is understood that the rate on printing paper from Holyoke, Mass., to Nutley, N. J., suspended until September 28th by the I. C. C., will be cancelled.

The New
Ganschow Worm Gear
Power Transformer

The William Ganschow Company presents this advanced type of worm gear speed transformer, permitting heavier and more constant service, as well as wider load fluctuation, than has ever been found practical with previous types of worm gear speed reducers.

Greater efficiency, dependability, and flexibility, coupled with the wider range of applications, are features worthy of your investigation. Our very complete engineering service is available, and we will gladly help you to apply Ganschow Worm Gear principles to your speed reduction problems.

Ask for the new Ganschow Worm Gear Speed Transformer Bulletin.

William Ganschow Company
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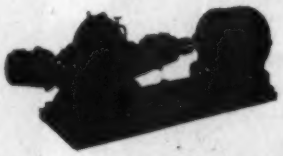
Ganschow
SPEED TRANSFORMERS
CUT GEARS · FABROIL NOISELESS PINIONS

CENTRIFUGAL PUMPS FOR THE PAPER INDUSTRY



The Bethlehem Horizontal Centrifugal Pump is of the double-suction, single-stage type with horizontal split casings. Capacities 200 to 17,000 gallons per minute against heads of 20 to 250 feet.

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Pickles' Patent Automatic Steam Regulator FOR Paper Making Machines

Which absolutely controls the drying of the sheet. Installed on sixty days' trial

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"The Pioneer Boiler Treatment"

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POWER PLANT PIPING

We are fully equipped to supply fabricated materials and to install complete piping systems for Electric Power Stations, Blast Furnaces, Steel Mills, Coke Works, Paper Mills and Industrial Plants of every description—backed by an experience of almost a quarter century.

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PITTSBURGH, PA.

Let Tide Water Cooperate with You

THE Tide Water Engineering Bureau is at your service in solving all lubrication problems. This expert service is entirely *without cost or obligation.* Send a card today and one of our Staff Engineers will be glad to call at your mill to make a lubrication survey under your direction.

The Tide Water Power Group
—for paper mill lubrication

TYCOL GEAR COMPOUND
A soft, semi-fibrous grease for enclosed gears under heavy pressure.

TYCOL MEDIUM YARN GREASE
For beater bearings where high temperatures, heavy pressures and water are present.

TYCOL YARN GREASE
For dryer and other bearings operating at high temperatures.

TYCOL LUBRICANT NO. 1
A medium hard grease for Jordans, grease lubricated calender rolls, and for general use.

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A hard grease for replenishing Tycol Yarn Grease.

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A viscous lubricant especially recommended for use on slow-moving open gears.

TIDE WATER OIL SALES CORPORATION
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FOR HANDLING BULK MATERIALS

Write for Handbook of Conveyor Practice

ROBINS CONVEYING BELT COMPANY
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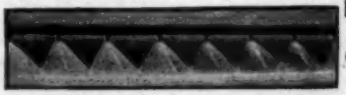

De Zurik Washers and Consistency Regulator

Spacing of nozzles up to 18" on wire and roll washing, 5' on head box foam sprays.

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Steel Plate Construction

Steel Storage Tanks, Blast Furnaces, Gas Holders
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Steel Transmission Towers

RITER-CONLEY COMPANY
General Offices, Pittsburgh, Pa.

Paper Mills Win Rate Case

Second only in importance to the American Writing reorganization plan, was the announcement from Washington that the Interstate Commerce Commission had decided in favor of the New England Paper & Pulp Traffic Association in its contention for cancellation of the suspended schedules on China clay and waste paper moving in import and interstate movement through the port of Boston. The increased schedules were filed to become effective on March 15th last and were suspended on application of C. L. Whittemore, traffic manager of the association. The Massachusetts Public Utilities Commission refused to suspend the intrastate increases. The Boston & Maine Railroad, whose rates on clay and waste paper within 50 mile limits were increased, spoke strongly for the interstate increase at a hearing held before Examiner McGrath in the Federal Building, Boston. Arthur Bull of the Fitchburg Paper Co., C. L. Whittemore, Arthur Holbrook, of the England China Clay Sales Corp., and N. F. Bartlett of Hollingsworth & Vose Co., were witnesses for the paper mills. The traffic involved most heavily was that on China clay, particularly to Lawrence, Mass., and on waste paper from the Pacific Coast and England to Fitchburg, Leominster, West Groton, Wheelwright and Lawrence, Mass.

It is a distinct paper mill victory as all points contended for by the association were won. Rates from Boston to the points named on waste paper involving stock that originates in this city stand as advanced, inasmuch as the State Commission refused to suspend originally. The case developed the fact that a surprisingly large quantity of heavy book stock is moving from the Pacific Coast via steamer to Boston and points in New England and beyond.

The executive board of the Holyoke Chamber of Commerce has authorized its officers to form a Manufacturers' Committee of the Chamber to deal with mutual problems affecting all the industries of the Paper City.

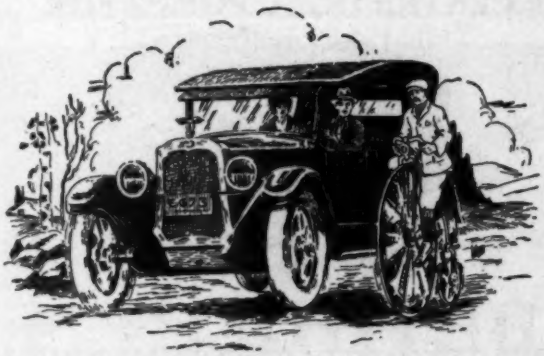
Eagle Lodge Union Wins Point

Without serious protest, the first of the two point program has been gained by the Eagle Lodge of Paper Makers, the local of the International Brotherhood of Paper Makers, in Holyoke. Adam Wilkinson, labor commissioner of the American Writing Paper Co., S. L. Willson and M. H. Burns, of the International Union, together with a representation from the Eagle Lodge sat in conference and it was agreed to curtail the working week to five days insofar as was possible. Increased production through improved machinery is bringing about the needs of a 40 hour week in the view of the union. In order to make production more uniform and consistent, the manufacturers have accepted the plan, though the attitude of the mills is still far from unanimous. The wage question was the issue which was temporarily put aside.

A new steamship service has been established from Boston to Philadelphia, and among the first cargoes moved was a large tonnage of waste paper for paper mills in the vicinity of the Pennsylvania city. It is the first time in years that paper stock has moved in that direction from Boston.

A newsprint machine has been installed in the main plant of the Great Northern Paper Co., to replace the No. 8 machine which had been in continuous operation since 1900, the first of the Company's machines to produce paper at that mill. The old machine had produced over 300,000 tons of newsprint during its service for Great Northern and is still in good enough condition to be removed and set up elsewhere, the company having sold it at a high second hand value for use in another mill. The removal of the old machine was done in three days under the supervision of the Foundation Company. Twenty-seven box cars were required to transport the entire machine and equipment. The new machine started making newsprint the third week of June.

The Brown Company, Berlin, N. H., were hosts to members of the American Institute of Chemical Engineers, the last week in June, as described on another page in this magazine, under the heading of "Observations of a Traveler."



From the Days of the High Wheel Bike

TUCKED away in the heart of Maryland is a factory that for half a century has been keeping in step with American industrial progress. From the days of the "high wheeled bike" to the present era of de luxe motor cars, this factory has been producing quality products—products of the motive sort that have contributed much towards the pleasure and relaxation of all classes.

Through successive steps, from the manufacture of the ancient, high wheeled bicycle, the pneumatic tired "two wheeler," to the production of a present-day quality motor car, this plant has used T. B. Wood's Power Transmission Appliances.

Installed years and years ago, Wood's Products are still performing efficiently and satisfactorily. And they will continue to perform in that manner, for Wood's Power Transmission Appliances are built to endure.

When you install Wood's Cast Iron Hangers and Pulleys you assure your factory a life time of dependable power transmission performance.

T. B. Wood Sons Co.
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NEW ENGLAND BRANCH: Cambridge, Mass.
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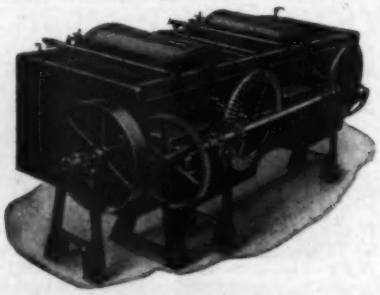
Makers of Power Transmission Machinery Since 1857

Shafting, Hangers, Pulleys, Flexible Couplings, Friction Clutches and the U.G. Short Center Belt Contactor.



Bleached Sulphite Washer

TWO A. D. WOOD CYLINDER TYPE

A high efficiency machine handling large capacity with low power and minimum upkeep.

Absence of couch or doctor and continuous self cleaning wire are important features in handling stock containing bleach liquor.

Simply and strongly constructed.

Chemical resisting material furnished where necessary.

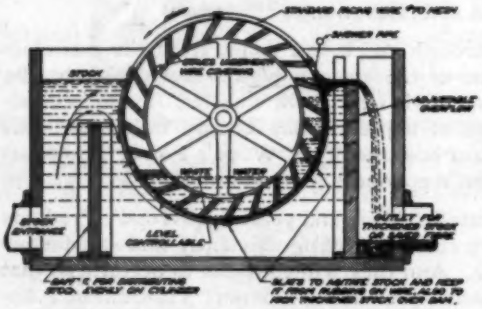
SEND YOUR ORDER AND GET THE BEST

Decker and Decker Washer

A well designed, simple, reliable and compact machine to thicken or wash your stock for long periods of time without attention.

Multiple units used to give a machine of great cleaning capacity per cylinder. An ideal layout when used in conjunction with our high dry test Rogers Wet Machines.

We call on our extensive experience to solve your problems quickly and efficiently.



A. D. Wood Machine

Used as Pulp Thickeners, Savealls, Pulp Washers and Water Filters

ADVANTAGES:

Reduced Wire Costs	No Couch Roll
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Only 2 H. P. Required	No Doctor
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Over 150 Machines Sold and in Use

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FOR FOURDRINIER MACHINES

More than 30 already giving invaluable service on fast and slow speed machines, handling all kinds of stock, heavy and light. Install it, adjust to give desired weight, and leave it alone. Overweight claims eliminated, with big improvement in broke loss and running conditions. Handles capacities ranging from 10 to 125 tons with equal efficiency.

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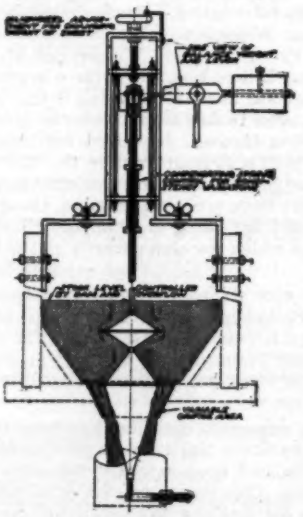

PULP AND PAPER MILL MACHINERY
GLENS FALLS MACHINE WORKS

GLENS FALLS, NEW YORK

OUR LINE IS MANUFACTURED IN CANADA BY

THE NORTHERN FOUNDRY & MACHINE CO., LTD., SAULT STE. MARIE, ONT.

See pages 344 to 345 in the 1926 Paper and Pulp Mill Catalogue

S. D. Warren Mill Building Additions

The S. D. Warren Co., are starting construction of the tallest chimney in New England to insure the utmost cleanliness in their book paper. It will be of concrete, 350 feet high and will contain a cinder catching device. The top of the chimney will have a diameter of 18 feet, inside measurement, and the base will be 34 feet wide, outside measurement. The chimney will be built on composite piles 320 in number.

Another step taken by the S. D. Warren Co. at their Cumberland Mills plant is the erection of a wood washing plant in connection with their soda pulp mill. This structure will be of brick, 30 feet high and 40 by 30 in dimension. The wood will be washed in steel drums nine feet in diameter and 30 feet long. The wood will be conveyed through the yard on a chain 250 feet long and dumped into the drums. It will be carried from this plant when washed on another chain to the chippers. More storage room is to be provided by raising the roof of the digester building 10 feet. The present chippers will still be used but will be moved to accommodate the new arrangement. The chipping time will be reduced seven hours under the new arrangement, it is estimated by plant engineers. The Warren company engineering crew is handling the construction of both chimney and new washing plant.

Forty-Hour Week for Holyoke

Following a conference between representatives of paper manufacturers and the Brotherhood of Papermakers at Holyoke, on June 24, an attempt is to be made to arrange time schedules so that the mills of the American Writing Paper Company will eliminate Saturday work. According to statements by the union men, increased production through improved machinery is bringing about the need of a 40-hour week in the industry if steady work is to be assured. It is said that as a result of their success in the local field, the International Brotherhood of Papermakers will launch a movement for the general adoption of the 40-hour working week.

There will be no change in wage schedules, demands in that direction being held in abeyance. The arrangement is said to be satisfactory to President Willson of the American Writing Paper Company and his labor commissioner, Adam Wilkinson.

Benjamin F. Bicking

Benjamin F. Bicking, superintendent of the General Paper Company, Inc., Beaver Dam Mill, Buck Run, Pa., died suddenly on June 18th, while motoring in his car near Coatesville. He was 67 years of age.

Mr. Bicking was one of the old time executives in paper manufacturing in that section of the country, having joined the C. S. Garrett Mills, the owners of the present Beaver Dam Mills, when a boy and rising to the position of superintendent and general manager previous to its being sold to the General Paper Company in 1911.

The exhibit of Graton & Knight Manufacturing Co., Worcester, Mass., in the industrial exhibition hall of the convention of the Associated Advertising Clubs of the World, held recently in Philadelphia, was awarded first prize in competition with exhibits of sales campaign material entered by hundreds of the leading manufacturing and business firms in the United States and fourteen foreign countries.

Frederick Ritz, superintendent of the National Vulcanized Fibre's mill at Newark, Del., died at the Union Memorial Hospital in Baltimore on June 15. Mr. Ritz had been associated with the paper industry for many years. He was formerly superintendent of the Eaton-Dikeman Paper Co.'s mill at Lee, Mass., and was an active member of the American Pulp and Paper Mill Superintendents' Association.

Mr. B. M. Horter, formerly of the Philadelphia Office of The Cutler-Hammer Mfg. Co., has just been appointed manager of the company's Boston office. He succeeds Mr. J. M. Fernald, who has resigned to enter a different field of business.

ROOTS

Rotary Pumps

Where dependability counts—that's where you'll find Roots Rotary Pumps. They're not the cheapest to *buy*, but they're the most economical to use—economical in power consumption, in maintenance cost, and because you *know* they'll be right on the job when you need them most.

For vacuum service or for handling liquids and stock, you can't buy better. Ask for a bulletin covering pumps for your particular service.

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WANTED—Copy of February 14, 1917, issue of "Paper." State condition and price. Box 100, The Paper Industry.

WANTED—An assistant plant Engineer for large paper and pulp mill in Northern Wisconsin. Construction, maintenance and layout experience preferred. In reply give experience, training, age, nationality, health and references. Apply Box 99, The Paper Industry.

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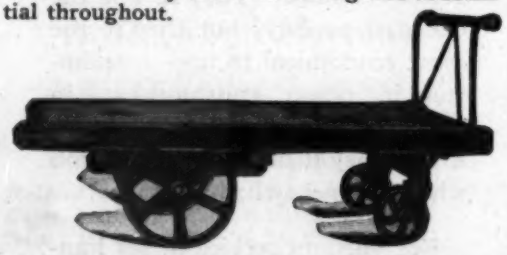
CHIEF ENGINEER—First-class man to take charge of electric and steam operations in a two-machine paper and 100-ton Sulphite Mill—must be able to get results, handle men, and furnish good references. None but steady, energetic man need apply. Apply Box 101, The Paper Industry.

Used Platform Trucks

We offer a large quantity of Platform Trucks with handle, similar to the illustration. The carrying surface of these trucks measures 44x64—and they are built strong and substantial throughout.



We are also in a position to supply platform Elevating Trucks, as well as actual platforms for holding the paper.

Another useful value for the large Paper Mill:

63" Oswego Power Paper Cutter

Write for the current issue of "The Hall Broadcaster"

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WANTED:—Experienced Chemist Engineer for Canadian Mill, capable of carrying on control and research work in connection with sulphite, groundwood, and Paper Mill Operation including complete control of color matching. Reply, stating experience and salary required, care of Box 90, The Paper Industry.

Help Wanted

Men with finishing room experience for finishing, inspecting and supercalendering. Also helpers and understudies for above mentioned jobs. Reply stating experience, age, wages expected, and why you wish to leave present job. Also state kind of paper and stock with which you have been working. Apply Box 96, The Paper Industry.

Help Wanted

Back tender capable of promotion to machine tender, and third hands capable of promotion to back tenders. Reply stating experience, age, wages expected, and why you wish to leave present job. Also state kind of paper and stock with which you have been working. Apply Box 97, The Paper Industry.

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One 118" Fourdrinier tissue machine.
FOURDRINIER PARTS
Pusey and Jones design.
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100" nine roll. 72" nine roll. 62" seven roll. 64" seven and nine roll.
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54" Holyoke Seybold. One 44". One 38". Twentieth Century Seybold.
LAYBOYS
102". Two 72". Three 52" Erie single. One 72", two 60" Moore & White.
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56" seven roll Holyoke. Four 66" Holyoke. One 62", one 60", one 45" Norwood.
SUCTION ROLLS
104"-136" Millspaugh with Connersville pumps.
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Six Deane triplex 12x12. One Deane triplex 9x8. Four 5" Post.
BEATERS
Two Jones 65x57. One Holyoke 60x60. Three Horne 36x36.
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One large Horne. Two N. & W. Monarch. One Jones Standard.
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Taylor Stiles No. 11. One No. 2 Daniels.
WASHER
Jones 65x57 equipped with four cylinder washers.
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Variable speed steam engine, ERIE BALL, 12x12x14.
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Three 72" Sandy Hill wet machines.
Two Shredders, MITTS MERRILL, No. 17.

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Paperboard Association Announce Summer Meeting

The summer meeting of the Paperboard Industries Association will be held at the Roosevelt Hotel, New York City, Wednesday, July 21, and Thursday, July 22nd.

On Wednesday, there will be a meeting of the Folding Box group in the morning and of the Paperboard group in the afternoon. The container group meeting will be held on Thursday morning and the general meeting of the three groups in joint session will convene at 2:00 p. m., Thursday afternoon. A meeting of the container group advisory board is also being called for the morning of Wednesday, July 21st.

A special effort is being made to secure 100 per cent representation of member companies at the meetings. At the May meeting, Vice-President A. C. Osborn, of the Folding Box group, appointed a special committee on attendance, which has commenced to function. Interesting programs are now being prepared for the group and general sessions.

The Triumph Electric Corporation has been organized to take over the good will, designs, records, patent rights and inventions of The Triumph Electric Company, motor manufacturers, Cincinnati, O. The new company will specialize on its TR self start, automatic, heavy duty motor and at the same time be in a position to supply its other lines of electrical and refrigerating products.

It is reported that the Kimberly-Clark Co. has ordered four 301-inch paper machines from Chas. Walmsley & Co., to be used in a new Canadian mill.

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Paper Mill Sales Agent
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The Falls Handbook, 18-B, not only describes the superiority of this complete line, but also contains much helpful information for you. Send for your copy today.
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¶ Fine faced felts for fine papers. For coarse papers use "Triune" three-ply felts — **they're dependable.**

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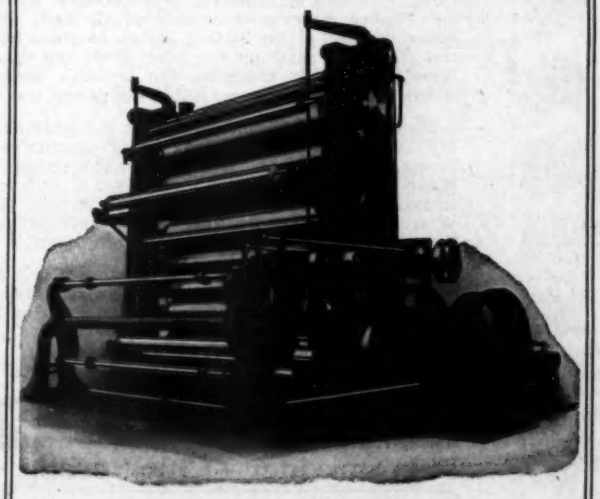

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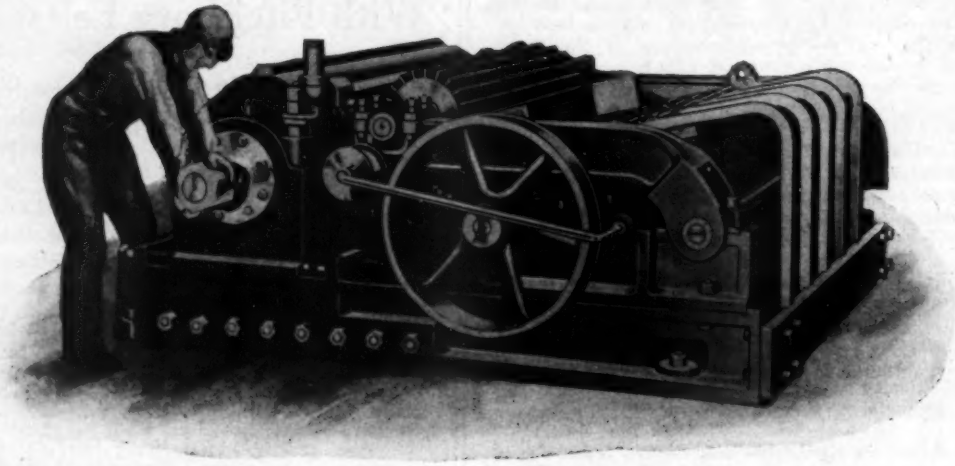


Turning This 13001b. Roll by Hand Proves That its Power Requirements are Low

THE Arpeko Shredder tears laps, sheets or rolls of pulp into particles slightly larger than a postage stamp. These particles have open fibrous edges, which readily absorb water and quickly make a smooth mixture. By furnishing with shredded pulp, instead of solid laps or sheets, the beater is relieved of the heavy "chewing-up" operation and in many cases, 25% of the total bearing time can be saved.

A 50 H. P. Motor will operate the Arpeko Shredder at the rate of 4 dry tons of hard kraft sheets per hour. The arbor roll of this shredder is mounted on Timken Tapered Roller Bearings and requires only 5 H. P. to start and bring up to running speed, whereas on plain bearings 75 H. P. would be required. Furthermore, the tapered construction of the Timken Bearing takes care of all loads and thrusts; the rolling action instead of the sliding action of plain bearings reduces friction and eliminates wear on the arbor shaft and the adequate packing surfaces provided in mounting the bearings insures no wastage of oil. Briefly, they save Power, Lubricant, Time and Repairs.

Many mills are prejudiced against any additional power using machinery because they are already using practically all of their available power. However, if these mills will estimate the power required to turn an 8,000 lb. beater roll thru a load of stuff long enough to complete hydration, and then consider that an Arpeko Shredder will save anywhere up to 25% of the total beating time and power, they will find the net result is, in most cases, a saving in power.

These and the many other advantages of the Arpeko Shredder which prove that it is not a luxury to be enjoyed by only the larger production mills, are fully explained in our Bulletin No. 100. Write for it today—no obligation.

Salient Features

(1) Suitable for dry, partly dry or partly frozen, laps, sheets or rolls.
(2) 50 H. P. Motor will operate at rate of 4 dry tons of hard kraft sheets per hour.
(3) Only 5 H. P. required to start and bring up to running speed.
(4) Timken Roller Bearings insure long life and save Power, Lubricant, Time and Repairs.
(5) Revolving blades will shred 400 dry tons without changing.
(6) Blades can be removed, conditioned and replaced by one man in three hours' time.
(7) Pulp is shredded or torn, not cut, insuring easy hydration.
(8) Shredded product contains 25% water, due to shower at shredding point.

ARPEKO

Pulp Shredder ~ Chip Screen ~ Wood's Ideal Chip Breaker

RYTHER & PRINGLE CO.
Carthage, New York

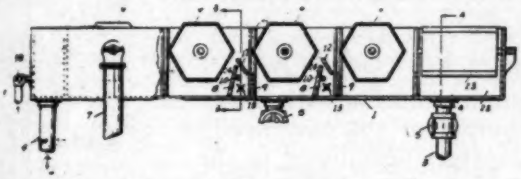
Technical Developments in the Paper Industry

Domestic and Foreign

The following abstracts are of the latest developments found in the foreign press and the domestic and foreign patent offices. Photostats and translations of complete articles and patents can be obtained at cost price.

Treating Paper Stock

PAPER stock is treated in a machine which comprises a series of screens, a mixing box arranged in between the screens and a baffle board arranged so that the stock is



directed downward within the box as it enters the same. An agitator is also arranged within the box as well as a pipe for the liquid entering the apparatus. United States Patent, No. 1,586,951.

Pulp from Hulls

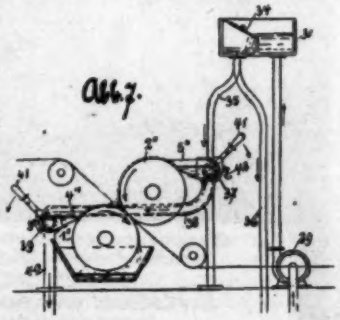
FIBROUS pulp is extracted from the hulls of rice by placing these hulls in a closed vessel and adding water so that it covers the hulls. Then a solution of five per cent sodium hydroxide is added to the vessel to the extent of approximately twenty-five per cent of the weight of the hulls. The mass is then boiled under a pressure of twenty to eighty pounds per square inch for a period of six to eight hours. This has the effect of extracting and settling the silicates that are present in the fibrous pulp. The pulp is then washed and finally defiberacted. United States Patent No. 1,588,335.

Calcium Carbonate from Black Liquor

BLACK liquor, obtained in the manufacture of soda pulp, is subjected to the action of lime which is added in an amount insufficient to causticize the entire solution. The precipitate that is formed in this manner is then removed and the remaining solution is causticized with additional lime and the filtering operation is repeated. The recovered precipitates are calcium carbonate. United States Patent, No. 1,587,679.

Sizing, Coloring and Impregnating Paper Webs

GERMAN Patent, No. 427,531 is concerned with an apparatus which is employed for the purpose of sizing, coloring and impregnating the paper web either within the paper making machine or after the paper has left the machine. The process consists in passing the paper web between two impregnating rollers which are located obliquely one over the other and which are also provided with impregnating devices. The paper may pass through this machine either alone or in company with a felt. Thus in the illustrations 4" and 5" are impregnating channels which are in contact with the impregnating rollers. These channels or troughs are connected together by means of hollow trunnions (37) and (39) and can be disconnected as well by means of a lever (41). Furthermore, they are also connected with a circulating system (29) and (30) which serves to circulate the impregnating liquor.



Watermarking Paper

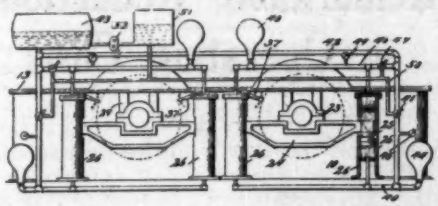
THE process that is patented in German Patent, No. 427,016 is concerned with the formation of watermarks in paper with half tone effects running into each other by means of properly designed metallic coatings on the dandy rolls.

It is known that watermarks are produced in paper due to the difference in the thickness of paper at one point than at another, which is brought about by proper depressions and elevations in the design. These designs are pressed into the soft paper and in this manner the watermark is formed. It is of course understandable that watermarked papers of this sort have the design imprinted in them all in one tone.

The particular feature of this invention is the making of the waterproofed design in such a fashion that different tones are produced in the watermark. This is accomplished by causing certain marks on the dandy roll engraved in relief to press down on the soft paper web so that the thickness of the paper is least at these points. The rest of the watermark will then appear in another tone, for the paper will be thicker at those points. In this manner what are called half tone watermarks can be obtained.

Refining Engine

THE refining engine, which is shown in the accompanying illustration and which is patented in United States Patent, No. 1,588,044, is made up of one or more rolls which are provided with cutter blades. The rolls are supported on fluid



controlled journals which allows the rolls to assume different positions with respect to the stationary blades. This, of course, depends on the quantity of pulp that passes between the blades on the roll and the stationary blades.

Chemistry of the Sulphite Cellulose Digestion Process

IN A very interesting article, published in Svensk. Kem. Tidskr., volume 37, pages 116-124, E. Haegglund discusses the chemistry of the digestion of sulphite cellulose. In the first place he points out that in the early stages of the digestion of wood chips with liquors that contain sulphur dioxide and sulphites, one or more ligninsulphonic acids are formed. These acids cannot be removed from the sulphite pulp by mere washing with water.

The lignin in the wood is chemically combined with carbohydrates and the sulphonic acids of these compounds hinder the penetration of the acid liquors into the inner structure of the wood. During the process of digestion, the sulphite liquor enters into reaction rapidly at the outset but then the rate of reaction is reduced. It has been found that lignin-sulphonic acids will accumulate in the pulp, that is within its interior structure, if the rate at which the hydrolysis of the lignin-carbohydrate compounds is slower than the rate of

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See pages 402-403 in the 1926 Paper and Pulp Catalogue
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sulphonation, but this increase is hindered by a rise in the temperature of digestion.

Sufficient lime should be present so that the digestion is complete or nearly complete before combination of all the sulphite occurs. Ligninsulphonic acid is comparable in strength with mineral acids. During the progress of digestion, the concentration of the ligninsulphonic acid approaches the original concentration of the sulphur dioxide. At any moment during the digestion process the lime present is distributed between the ligninsulphonic acids and the sulphite, and at the completion of digestion the greater part is combined with the former. The digestion liquor remains a bright yellow color provided that sufficient sulphite is employed, and darkening is brought about by the use of too high temperatures in the digestion process. Blackening of the cellulose takes place when the acidity of the digestion liquor increases too much by the formation of ligninsulphonic acid and sulphuric acid, insufficient lime being present.

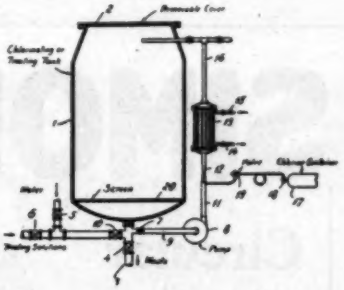
Removing Ink from Paper

SEVERAL new improvements in the process of removing the ink from old print paper form the subject of French Patent, No. 587,716.

In the first place, the paper is ground up in the presence of an alkali or of a substance that has an alkaline reaction. Certain mineral matters are used for this purpose, after they have been partially converted into the collodial state by mechanical means. Such substances as magnetism silicate, clay and the like are mentioned. It is also indicated that colloid protectors are employed, such as casein, dextrin, gelatine and the like.

Extraction of Cellulose

THE illustration shows an apparatus which is patented in United States Patent, No. 1,587,631, and which is employed in the digestion of paper stock. The improvement in the process consists in the circulation of the water through a body of the cellulosic materials contained in the digester (1). The circulation is accomplished by means of the pump (8). The circulating liquor is heated in the heater (13) which is external to the digester itself. Thus the circulation is maintained in a closed cycle. Chlorine is fed to the circulating liquor from the chlorine container (17) through a line controlled by a valve (19). The chlorine line enters the liquor line at the point (12).



Theory of Rosin Sizing

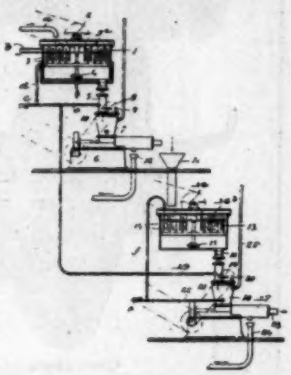
SULPHITE cellulose absorbs aluminum from alum solutions and the calcium passes into the solution. The amount of aluminum which is absorbed depends on the calcium content of the cellulose, and becomes a minimum for ash-free filter paper. Aluminum is not absorbed as hydroxide, but probably replaces calcium in some organic combination. If cellulose containing aluminum or calcium is washed with water, some of the metal passes into solution, calcium more freely than aluminum. If more sulphite cellulose is added to the wash water, the aluminum is absorbed, and may thus be transferred from one portion of cellulose to another.

Sulphite cellulose and even ash-free filter paper are able to absorb and fix rosin without any previous treatment with alum. The amount absorbed depends on the degree of dispersion of the rosin sol. Thus from a sol which is prepared by pouring an alcoholic solution into water, sulphite cellulose was able to absorb 55.5 per cent of the rosin. On the other hand only 16 to 25 per cent could be absorbed from sols which were made by adding the calculated amounts of dilute sulphuric acid to sodium resinate solutions.

After treatment with alum and washing, ash-free filter paper was able to absorb practically all the rosin from the first sol, but only fifteen per cent from the second sol. Sulphite cellulose after alum treatment was able to absorb as much as twenty per cent of its weight of rosin from a sol prepared from the alcoholic solution, although the excess of alum has been washed off and could not have passed into the rosin sol. From sols which were prepared from sodium resinate, only approximately fifteen per cent was absorbed. The amount of rosin which was taken up by sulphite cellulose after alum treatment may be increased by adding acids or neutral salts, which diminish the dispersion of the rosin, but if too much is added, poor sizing may result. Any alum passing into the rosin solution assists sizing in this way. Papierfabrikant, 1926, volume 24, pages 49-58.

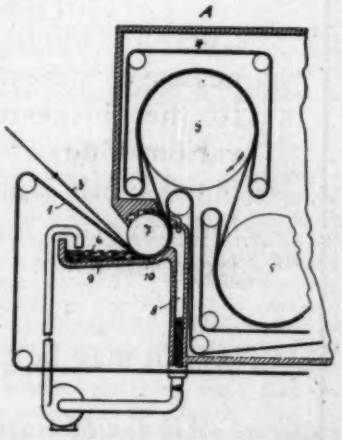
Recovering Lye from Dissolved Cellular Substances

THE illustration shows an apparatus which is patented in United States Patent, No. 1,587,345, and which is employed for the purpose of recovering the spent lye from the manufacture of pulp. The installation comprises a vessel for the straw cellular substance which comes from the digester. There is also another vessel for the undiluted lye. Means are provided for heating the latter vessel, and there is also provided a stirring apparatus comprising stationary and movable rods. A screw press and a pipe for leading the mixture of cellulose and lye into the press are also part of the installation. The undiluted lye is pressed out of the mixture and flows off in one direction and the cellulose is recovered in another direction. The remainder of the lye is removed into a second vessel, in which there were also provided means for disintegrating the cellulose material recovered as above. The equipment of the second vessel is the same as that described above.



Vacuum Drying Device For Paper Webs

THE new vacuum paper drying machine, which may be seen in the accompanying illustration, and in which the web is made to pass through a liquid seal on its way into and out of the vacuum drying chamber, is characterized essentially by the feature that paper web is protected from contact with the liquid seal by one or more guide or carrying bands. These move along with the web and entirely enclose the latter when it passes through the liquid seal. Hence it does not matter if the seal is stationary or moves horizontally or vertically, that is, whether the liquid used in making the seal circulates or not.



As may be seen from the figure, the carrying belt or band (1) leads the paper web (3) under the liquid level in the seal and thence into the vacuum chamber, and then yields the web up to the guide felt (4) which carries it around the various heated cylinders in the dryer. In a similar way a belt takes up the dried web, when it is ready to leave the drying apparatus and leads it through the liquid seal at the exit end of the dryer, protecting as before from coming in contact with the liquid.

It is understandable that the continuous passage of the web and protective belt through the liquid seal will carry along some of the liquid from the trough (6). This liquid will pass

Koegel's Patent Ball Bearing

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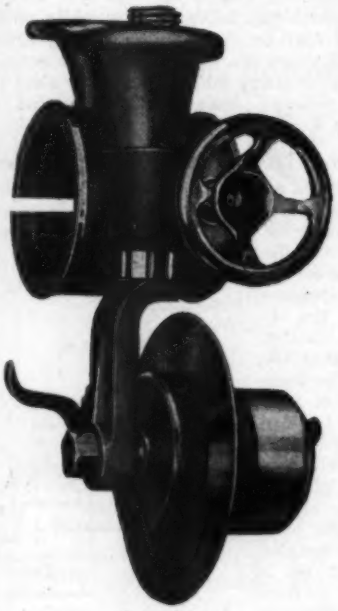
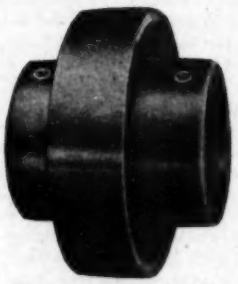


Complete



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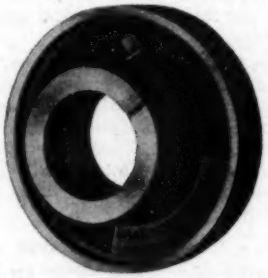

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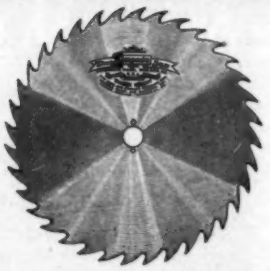

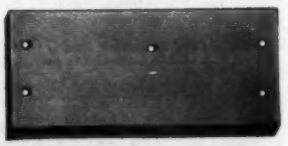

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Simonds Saw and Steel Co.

Fitchburg, Mass. Established 1832 **Chicago, Ill.**

under the roller (7) and then will eventually drop down into the channel (8). From this point the liquid is taken and carried into the trough (9) and in this way a sufficient supply of liquid is always maintained in the trough so as to keep the vacuum within the dryer chamber.

The belt (1) is made waterproof and this is what protects the web from being moistened by the liquid in the seal. In special cases two such belts may be used in such a fashion that the web lies between them and is thus very carefully protected from coming in contact with the liquid seal. The liquid seal itself can be either mercury, water, amalgams and other substances. German Patent No. 426,610.

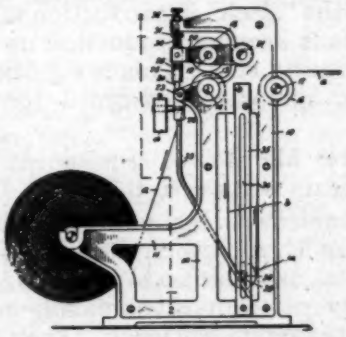
Paper Board Making and Testing

AN INTERESTING article on the manufacture of various grades of paper board and their testing is published in Papier und Pappe, volume 3, pages 46 and 75. It is claimed that the resistance to bending, in other words the flexibility, of the board is a very important property and goes far in establishing the quality of the board. When the resistance of the board to tearing is determined, a figure is obtained which is also of value in establishing the quality of the board, but it must not be assumed that this figure will in itself give the tester a correct conception of the flexibility or resistance to folding of the board. There are many different boards which have a higher resistance to tearing than resistance to bending or folding. Then again, there are others in which these values are almost the same or in which the tearing resistance is less. The following tabulation shows the tearing and bending resistance of various kinds of paper boards.

Type of board	Resistance to tearing in grams per	Resistance to folding sq. millimeter
Board made from wood pulp	849	2213
Board made from straw pulp	851	1496
Artificial leather	1334	930
Leather board	1404	1410
Board from old bank notes	1749	1896
Gray board	1954	1953
Shoe board	4181	3282
Hard board	4775	3510

Compensating or Regulating Device for Paper Webs

UNITED STATES Patent, No. 1,586,719, is concerned with an apparatus that is used for compensating or regulating the travel of paper webs. As may be seen from the accompanying illustration, it comprises a tension frame, an idler roller and a feed roller on the same over which a web of material travels and from which it depends on a bight. The feed roller feeds the bight at a speed which is in excess of its travel over the idler roller. A pressure roller is also provided whereby the web is pressed into operative contact with the feed roller. A tension roller is located in the bight for maintaining the web under a predetermined tension.



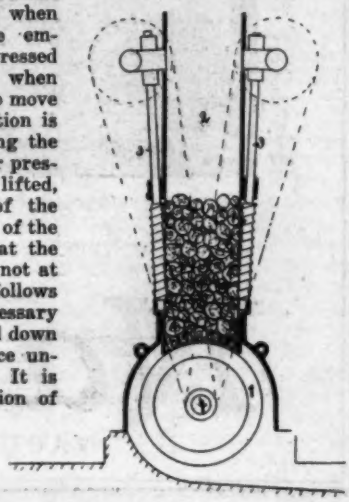
Technic of Rosin Sizing

VARIOUS details of the technology of rosin sizing are described in an article published in Le Papier, volume 28, pages 1231 ff. In that article it is indicated that rosin sizing has taken a pre-eminent position in the French paper industry and has practically supplanted all other sizing processes. The sizing process is carried as usual in two stages, first the dispersion of the rosin and then its fixation on the paper fiber. It has been found that a very high and entirely satisfactory degree of dispersion can be obtained in the rosin preparation by treating it mechanically with the aid of the colloid mill. A similar method has been found to be the hydrolysis of aqueous solutions of rosin soap.

It is said to be advisable to use rosin solutions of such alkalinity that the formation of rosin does not take place in the aqueous solution, but rather after its addition to the pulp and water mixture in the beater. Several methods are described for controlling and maintaining the proper concentration of hydrogen ions in the beater mixture which is considered to be the main factory in bringing about satisfactory fixation of the rosin on the paper fibers.

Wood Grinder

IN THE ordinary type of power grinder in which the wood is fed to the grindstone through a magazine hopper, so that operation is continuous, arrangements are provided whereby certain clamps engage with the wood and control its regular passage down the magazine to the stone. But it has been found that the feed to the stone is by no means regular when such arrangements are employed, for the wood is pressed against the stone only when these clamps are made to move downwards and this motion is not constant. For during the time that these clamps or pressure devices are being lifted, there is no pressure of the wood against the surface of the stone. The result is that the output of the grinder is not at a maximum. Hence it follows that some device is necessary which will move the wood down against the stone surface under constant pressure. It is evident that the operation of the grinder will be materially enhanced in this manner.



One method of getting around this difficulty is shown in the accompanying illustration and comprises a screw-shaped vertical rod on each side of the magazine. The turning of this rod has the effect of continuously pressing the wood against the surface of the grindstone. The wood is always in contact with this feeding device and hence the pressure against the stone is uninterrupted.

The stone is shown at (1) and the wood container (2) is arranged above it. Two or more spindles (3), with screw-shaped parts, are arranged along two opposite walls of the magazine. As these spindles rotate, they will press the wood against the surface of the stone. These spindles are driven from the grinder shaft (4).

A feature of the design is the fact that the spindles are not perfectly vertical but somewhat inclined inwardly, so that the wood is more firmly gripped the farther down it moves in the magazine. This process and apparatus are patented in German Patent, No. 407,961.

The Quality of Paper

THERE are two ways in which the value of paper can be judged. In the first place, there is the real value of the paper and in the second place there is the value of the paper as far as its usability is concerned. Both properties do not often harmonize with one another. In any case a definite quality of paper must always be used for a definite purpose. These various qualities of papers are obtained by carrying out suitable operations in the paper mill. Corresponding to the many uses to which paper is put are the various methods by which it is tested. If paper is to be considered as a construction material in the widest sense of the word, then the following properties can be determined from tests.

1. The weight, determined in terms of grams per square centimeter.
2. Strength, determined as tearing length in meters.
3. Elasticity, determined as percentage elongation.
4. Thickness, determined as millimeters through middle of sheet.

Besides these, the following tests are to be considered as of secondary importance.

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View showing two Nash Hytor Vacuum Pumps, at the P. H. Glatfelter Paper Company, Spring Grove, Pa. These are only two of the fourteen Hytors installed in this mill.

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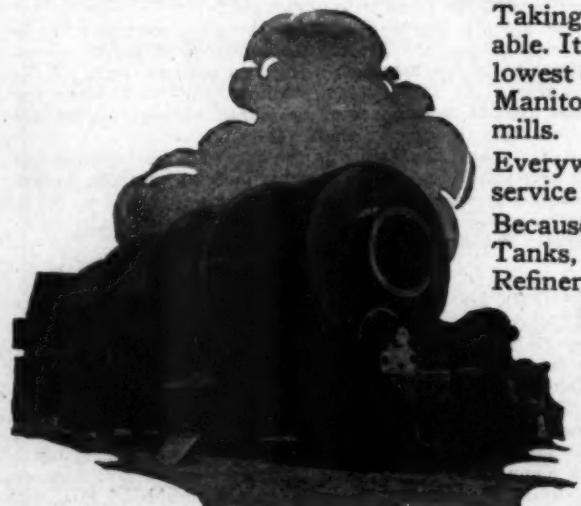

Taking up the "slack" in production is profitable. It means keeping production up at the lowest operating cost. This is significant of Manitowoc equipment designed for paper mills.

Everywhere Manitowoc equipment is in service it bears witness to this fact.

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5. Lasting quality, which is the modulus of work, equal to the tearing length times the elongation.

6. The compactness, or the specific mass, which is obtained by dividing the weight of the paper by its thickness.

Then there are two other tests which determine properties of the paper known as,

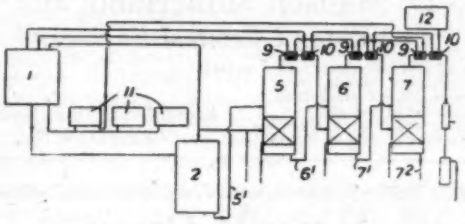
7. Hardness, determined as percentage of hard fibers.

8. Folding quality, determined as the number of folds that can be made with the paper before it breaks.

The result of these tests are employed in making a cyclogram of the paper and the study of this diagram yields the final conclusion as to the quality of the paper. Details of the method are to be found in Bumaschnaja Promischlennost, No. 1, 1926.

Digestion of Paper Pulp

BRITISH Patent No. 248,926 describes a process and apparatus used in the manufacture of paper pulp which is particularly characterized by the effort made to secure economy in the use of steam. The details of the apparatus are shown in the accompanying illustration. The digester (1) is



connected from its steam space and bottom to a closed feed reservoir (2) in which the pressure is reduced and evaporator stages (5), (6), (7) are provided, pipes (5'), (6'), (7') connecting them in series the final discharge being at (7^2). The steam from the evaporators passes through heat exchangers (9) transferring heat to wash liquor from the receptacles (11) on its way to the digester (1), and heat exchangers (10) transferring heat to the fresh caustic lye which is led from the tank (12) to the digester.

Treatment of Paper Stock with Chlorine

IN FRENCH Patent, No. 588,436, there is described a process and apparatus for the automatic and continuous chlorination of cellulosic materials. The reagent used for this purpose is a solution of chlorine in water. The treatment is carried out in a special chlorinator.

When the chlorine reagent arrives in the chlorinator in too great an amount, the excess chlorine produces a pressure in the interior of the apparatus. This pressure acts on a device which communicates the pressure to a valve on the line through which the chlorine reagent is being fed into the apparatus, with the result that the valve is closed and the feed of chlorine is shut off. When there is insufficient chlorine in the chlorinator, this is indicated by a reduction in pressure and the aforementioned movements are reversed and the valve on the chlorine line is opened, allowing more of the reagent to enter the chlorinator.

The entrance of the stock is also regulated by means of a float which is arranged in a suitable container and which acts on the rheostat of a motor which drives the pump that feeds the mixture of stock and water into the chlorinator.

Casein in the Paper Industry

PURE casein is a completely white product and must burn without any residue. It is insoluble in water but easily soluble after the addition of weak alkalies, soda or borax. The water content of casein, as used in paper making, must not be more than ten per cent, for when the casein is moist it will easily decompose in storage. Casein in the lump form is best suited for determining quality, color and purity. Fifty grams of the finely ground casein, sieved through a No. 20 screen, must pass into solution in two hundred cubic centimeters of water on the addition of fifteen grams of borax, heated on the water bath. The addition of acid causes the precipitation of the casein and the precipitated product will then be found to possess different viscosities according to whether it has been worked up with sulphuric, hydrochloric or lactic acid. Advantage is taken in paper making of the property of casein to condense with formaldehyde. Waterproofed papers are made in this way. Pappen und Holzstoff Ztg., volume 52, pages 568-72.

Treatment of Sulphite Waste Lyes

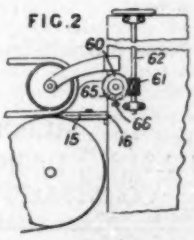
THE concentrated sulphite waste liquor is admixed with a mixture of slaked lime and the crude residue that is left from the manufacture of nitric acid. The acid sodium sulphate which is contained in the latter is converted into sodium sulphate and calcium sulphate by causticization with lime. Then the mixture is burnt in a rotating kiln in order to reduce the sulphate and produce a molten mixture of calcium sulphide and sodium carbonate. The latter is leached out of the mixture. The calcium sulphide is treated with carbon dioxide, after being suspended in water, and the sulphuretted hydrogen which is thereby evolved is burnt to sulphur dioxide and this is used for the conversion of the recovered solution of sodium carbonate into a sodium sulphite liquor, which can then be used in the digester. Canadian Patent, No. 252,011.

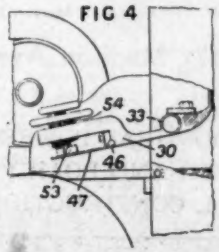
New Beater

AS THE capacity of the beater has been increased in recent years, the more difficult it has become to maintain proper circulation of the pulp in the beater trough. Many experiments have been made to overcome this difficulty and attention has also been paid to a second fault in the design which made the control of the pressure between the bedplate and the knives on the beater roll very uncertain. A new type of beater has been patented in French Patent, No. 498,216, which has the advantage of rapid circulation of the pulp as well as easy control of the pressure between the beater roll and the bedplate. The maximum attainable speed of the stock is from eight to ten meters per minute with a stock density of seven per cent or from ten to fourteen meters per minute with a stock density of six per cent. The beating is rapid and effective.

Paper Machines

IN A Foudrinier paper making machine, the follow of the stock to the forming wire is controlled by a flexible plate, as shown at (47) in Fig. 4. This plate is pivoted at (46) to a lip member (30) which is pivoted to a curved plate member at (33), the pivot being extended at its ends to form a stub shaft carrying a worm gear (60), Fig. 2, engaged by a worm (61) on the shaft (62) by the rotation





of which the lip member may be raised or lowered. The plate (47) is adjusted throughout its length by a number of screws (53) provided with locking screws (54). A graduated disc (65) and a fixed pointer (66) are provided to facilitate adjustment. When it is desired to lift the breast roll in order to change the wire, the shaft (62) is rotated to lift the lip member. The apron (15) which is hinged at (16) may be connected by a chain or the like to the lip member (30) and lifted in that manner. British Patent, No. 249,071.

Paper Pulp from Seaweed

THE seaweed is washed with sulphuric acid, hydrochloric acid, and soft water. It is then treated in a rotating washer or an autocalve with a solution of sodium hydroxide and quillaia bark and steam at from three to four atmospheres pressure for a period of eight to ten hours. After pressing and washing with soft water, it is treated with chlorine and acidified. French Patent, No. 595,394.

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New York, July 1, 1926.

THE market for paper is displaying fair activity, and prospects are for a continued good and steady demand of at least the proportions encountered by manufacturers and merchants over the last several months. The summer is here, yet there has been no sagging of demand generally that in the past has been noted usually at this time; consumers continue to buy in a more or less consistent manner and in moderately large volume, and expectation in the trade is that business will keep up on a comparatively high level all through the warm weather months. It is appreciated that buying thus far this year has been principally of hand-to-mouth character, consumers having placed orders when their requirements necessitated, and very little stock being carried. This is the situation still obtaining, and paper producers and dealers look for demand to develop in a rather steady way during the customary quiet period, owing to consumers being obliged to buy instead of covering a part of their needs from stocks on hand.

Activity in the industry, however, is still somewhat spotty. There are certain branches of the trade exhibiting much more life relatively than others; certain classes of paper being characterized by an excellent demand while others are comparatively quiet. This creates somewhat of a one-sided condition; also buyers are ordering some kinds of paper in piecemeal fashion, absorbing today what they require for consumption tomorrow. This works to the disadvantage of mills and jobbers because there is, of course, proportionately less profit in small-lot business. The unseasonable weather in most sections of the country has affected the demand for certain kinds of paper; for instance, unusually cool weather has retarded business in retail merchandising fields, and therefore has resulted in a diminished demand for wrapping and tissue paper from such sources. Only recently has demand for building papers improved, because construction activities in numerous parts of the country were delayed until more favorable weather sets in. However, this factor has about been removed now that more seasonable temperatures prevail over the greater portion of the United States.

Newsprint output keeps up on a high level, and in May was but a shade below the record-breaking heights reached during March and April. Production in the United States in May amounted to 141,032 tons, and shipments from mills to 142,294 tons, while production in Canada was 153,969 tons and shipments 151,990 tons, making a total United States and Canadian production of 295,001 tons and shipments of 294,284 tons. During April mills of both countries produced 297,066 tons, and in March 300,003 tons. During the first five months of 1926 United States and Canadian manufacturers produced a total of 1,437,069 tons of newsprint, showing a big gain over the 1,257,249 tons made in the same time of 1925, and comparing with 1,207,106 tons produced in the first five months of 1924, 1,139,785 tons in 1923 and 985,445 tons in 1922. The production by United States mills in the first five months of this year was 11 per cent greater than in the corresponding period of 1925, while Canadian output recorded a gain of 18 per cent. The combined production of the two countries in the first five months of the current year was 14 per cent more than in the same period of 1925. Stocks of newsprint at United States mills at the end of May last totaled 18,207 tons and at Canadian mills were 14,331 tons, making a combined total of 32,538 tons, which was equivalent to 2.8 days' average production. When it is considered that stocks in the two countries at the end of January last were 30,940 tons, it can be seen that newsprint manufacturers are shipping out their product about as rapidly as it is produced and despite the very large increase in output as compared with past years.

The monthly statistical summary of the American Paper and Pulp Association and affiliated organizations put the total production of paper and board of all kinds in the United States during April at 573,528 net tons, showing a slight decline of about 5 per cent from the 599,719 tons produced in the preceding month, following a 13 per cent gain in March over February. Production in February amounted to 523,657 tons and in January to 548,820 tons. All grades recorded a slight decrease in April as contrasted with March with one exception. The report shows that toatl shipments of paper from mills during April were 570,964 tons, against 592,126 tons in the preceding month, while mill stocks of all grades at the end of April amounted to 231,796 tons, contrasted with 226,973 tons at the end of March.

The monthly report compiled and issued by the Department of Commerce in Washington put the production of paper board of all kinds in the United States in April at 211,250 net tons, against 220,515 tons in March, 191,804 tons in February and 192,413 tons in January. Board mills produced at 107.1 per cent of their rated capacity during April, compared with 107 per cent in the preceding month. Orders received for board in April called for 200,241 tons, against 214,733 tons in March, while mills had unfilled orders for 90,008 tons of board at the end of April, compared with 102,362 tons at the end of March. Shipments of board from mills during April aggregated 208,492 tons, contrasted with 216,857 tons in March, and stocks at mills at the end of April amounted to 51,374 tons, against 52,049 tons at the end of March.

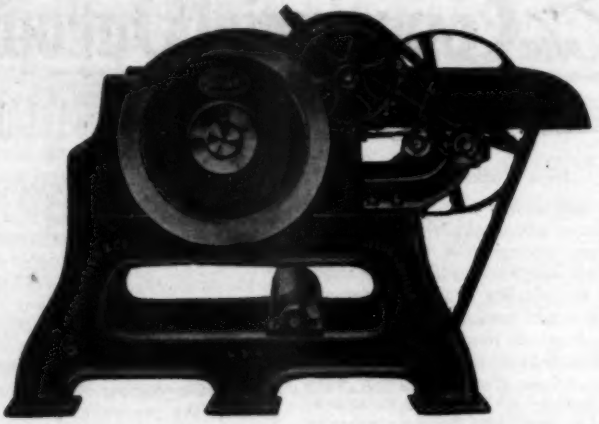
The market tone in newsprint is firm. With manufacturers well engaged and finding a ready outlet for their production, there is no sign of any easiness in quotations, and opinion in the trade is that there is small likelihood of any change during the remainder of this year. There is some apprehension that the steady increase in productive capacity, particularly in Canada, may eventually cause a saturation of the market and thus weaken prices, but this is a matter of the future and has nothing to do with the present market condition. Publishers are consuming print paper on a big scale, and are taking contract supplies in such a manner that little tonnage is available in the open market.

Coarse papers are in fair demand. It is reported that converters are buying kraft in very satisfactory quantities, thus giving a good deal of life to the market for this class of paper, and tissue is moving in at least normal volume. Prices of both wrapping and tissue are steady. Book paper is moving in consistent fashion and in comparatively large tonnage. Contract mills are well engaged, and spot buying is developing in probably better than usual volume for this period of the year. There has been no change in prices, and it can be said that if any definite tendency exists it is in an upward direction.

Fine papers are in steady call, although consumers are buying chiefly in small lots. Mills through New England are reported managing to keep fairly well occupied, operating at around 75 to 80 per cent of capacity on the whole. Fine paper values are well maintained, and some lines display a rising trend.

Building paper demand is excellent and expanding. Mills in nearly every instance are running close to maximum capacity and are said to have orders booked which will enable them to keep busy for quite a while. Prices tend higher, based on the improved demand and the advance in rag costs.

The market for boards is only moderately active. Consumers are willing enough to buy ahead, it is stated, but manufacturers are not accepting future orders, owing to the low prices prevailing for board. The season is approaching when a broader movement of board is customary, and manufacturers apparenlty anticipate higher market price levels. Wall board is in good call and steady in price.



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Paper Mill Engineers recognize more fully each day the advantages of Direct Connected units. Greater production and a finer quality of stock can be obtained and, because the speed of a motor is inherently uniform, a maximum quantity of a given grade of stock can be produced. Then, too, through the use of meters, the finishing point of the stock can be accurately indicated and the degree of contact of the Jordan knives can be determined more readily than when the "feel" of the operator alone is relied upon. Because belt pull is eliminated, the undue wear on bearings and eccentric position of the plug, so often found in Belt Driven units, is avoided.

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Domestic Raw Materials

Papermaking Rags

The market for papermaking rags has taken on a decidedly firmer complexion. There has been a broadening of consuming demand for some classes of rags from at least certain mill quarters, and notwithstanding that demand at the moment has quieted to some extent again owing to the inventory season, the tone is considerably improved, prices of most grades are on a little higher level and indications are the worst has been witnessed for this year in this commodity.

Early in June demand for roofing rags improved to a marked degree. Felt paper manufacturers, who had held off buying, came into the market and bought these rags in much larger volume, and values were carried upward until they recorded a substantial advance. This had a more or less strengthening influence on the market as a whole, and prices of nearly all other classes of rags firmed to some extent. Dealers took a stronger view of the situation and insisted on receiving better prices, quotations from abroad went up fairly rapidly, and within a period of a few days the market took on an entirely changed aspect, and has since held a good deal of the improvement.

Signs are the statistical position of papermaking rags is stronger than it has been possibly at any time thus far this year. It is a well known fact that roofing paper mills have experienced a marked increase in activity in their product during recent weeks; demand for roofing felt has expanded to a point where most mills are operating at full or close to full capacity, and, obviously, they are chewing up rags in much larger tonnage than in some time. While some mills are well supplied with rags, having sizable stocks on hand, there seems little question that their "control" is less today than a month or six weeks ago, which is to say they have fewer rags on hand or bought up. Most felt paper mills have been eating into their reserve stocks, and although they have bought in a fair way, indications are they have not replaced all the stock they have consumed, whereas at the supply source rags have been coming in from country sources and from abroad in smaller lots, and there apparently is little accumulation. Dealers appear to be adopting a different attitude, and are holding out for more favorable prices and do not seem so anxious to sell. This is particularly so as regards foreign rags, which is explained by the fact that the quotations issued from abroad are in most cases relatively above market levels prevailing here, which gives importers a narrow margin of profit and thus prompts them to be cautious in booking orders.

Roofing stock has advanced to where dealers quote No. 1 stock at about 1.90 cents f. o. b. shipping points, and No. 2 packing at 1.60 cents. Foreign dark colored cottons have been sold to felt paper mills at 1.75 cents ex dock New York for forward shipment from abroad, and foreign linsey garments at 1.95 cents. Frequently importers quote above these figures now because they say it is difficult for them to buy on the other side of the Atlantic at low enough costs to be able to sell to mills at these levels.

Old white cottons have firmed a little in price. Not much actual change has occurred in quoted rates but it is noticeable that dealers ask close to the higher ranges of quoted prices, and are more insistent on securing the figures named. No. 1 repacked whites are quoted at 6.50 to 7 cents per pound at shipping points, with special packings often held at well above these prices, while No. 2 repacked whites are priced at 3.50 to 4 cents a pound. Dealers as a general thing ask 2.75 to 3 cents a pound for repacked thirds and blues, and 1.75 to 2 cents for rough packing of blues.

In new cuttings, demand continued very spotty but with most paper manufacturers advising they expect to be in the market in a more active way in the near future, probably shortly after the inventory period. Consumers have been gradually working off their stocks of cuttings for several months, and likely are now in a position where they will be obliged to replenish. Prices of cuttings are holding their own at about last quoted levels with no broad changes. Some grades are in low supply and these display greater price firmness than others; dealers report incoming supplies light, due to strikes in the clothing manufacturing trade and also to poor business in the apparel trades which results in manufacturers cutting up less cloth.

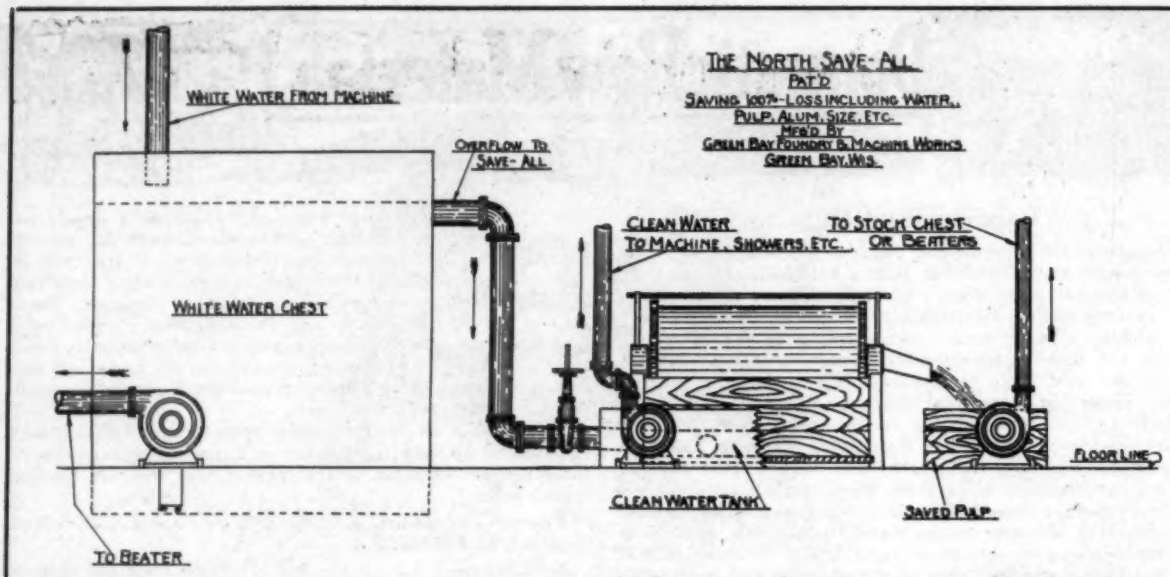
Foreign rags all show a steadier price tone, and most grades have moved up slightly. Dealers in Europe seem imbued with the stronger condition of the market here and are quoting higher prices.

Average quotations f. o. b. shipping points and ex-dock New York are as follows:

New Stock—	New York and Chicago
White shirt cuttings, No. 1	12.25-12.50
White shirt cuttings, No. 2	9.00- 9.25
Fancy shirt cuttings	6.50- 6.75
Washables, No. 1	5.50- 5.75
Unbleached muslin	12.00-12.25
White lawns	10.50-11.00
Overall cuttings, blue	8.25- 8.50
Black silesias	4.25- 4.50
Light flannelettes	9.75-10.00
Canton flannels, bleached	10.50-10.75
Canton flannels, unbleached	10.00-10.25
Shoe cuttings, bleached	11.50-11.75
Shoe cuttings, unbleached	10.50-10.75
Light silesias	8.50- 8.75
O. D. khaki cuttings	6.50- 6.75
Mixed khaki cuttings	5.50- 5.75
Corduroy cuttings	4.25- 4.50
Cottonade cuttings	4.00- 4.25
Linens, No. 1 white, foreign	13.50-14.00
Light prints, foreign	2.75- 3.00
Old Stock—	
Whites, No. 1 repacked	6.50- 7.00
Whites, No. 2 repacked	3.50- 4.00
Whites, house soiled	2.25- 2.50
Whites, street soiled	2.00- 2.25
Lace curtains	6.25- 6.50
Thirds and blues, rough	1.75- 2.00
Thirds and blues, repacked	2.75- 3.00
Black stockings	4.00- 4.25
Cotton canvas, No. 1	5.50- 5.75
White cotton batting	3.75- 4.00
Roofing, No. 1	1.90- 2.00
Roofing, No. 2	1.55- 1.65
Linsey garments, foreign	1.90- 2.00
Dark colored cottons, foreign	1.70- 1.80
Blue linens, foreign	4.00- 4.25
Gray linens, foreign	4.25- 4.50
White linens, foreign	8.00- 8.50
Light prints, extra, foreign	1.75- 2.00

Rope and Bagging

After displaying pronounced steadiness for quite a period, the market for old rope has eased just a bit, owing to paper manufacturers having let down in their buying and quoting slightly lower prices. It might be stated that old rope is off an eighth to a quarter of a cent per pound to where most mills offer 5.50 cents per pound f. o. b. shipping points for No. 1 domestic old manila rope, with some probably buying a shade under this basis. Foreign old rope is at best quiet; it seems as if American paper mills are little interested in this article, and prices are some $20 a ton below those obtain-



STOPPING POLLUTION AND MAKING A PROFIT

The above layout on a ten-ton machine shows a profit of $103 per day with no pollution of streams and an efficiency of 98% in returned pulp. All of the eight paper machines in this mill are thus equipped. Alum cut down one third. Name of mill on application.

We Sell Water Filters, Valves, Pumps, Stone Plates, Thickeners

See Page 347 in the 1926 Paper and Pulp Mill Catalogue

GREEN BAY FOUNDRY AND MACHINE WORKS, Green Bay, Wis.

Bleached and Unbleached
SULPHITES
KRAFT PULPS

Foreign and Domestic
GROUND
WOOD

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PAPER

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OF
EVERY DESCRIPTION

ing on domestic old rope which is nothing more than a reflection of the lack of demand. About 4.50 cents a pound ex-dock New York is usually bid for foreign manila rope and sometimes less than this figure is quoted.

Old bagging is in fair demand; that is, roofing bagging. There is not a great deal of activity in No. 1 scrap bagging, and it is said consumers are buying at slight concessions in some cases, but roofing bagging is higher and is finding a ready outlet. Dealers quote No. 1 scrap bagging at 2.50 cents a pound or a little under this price, and 1.30 cents or thereabouts for roofing bagging f. o. b. shipping points. It is reported that available supplies of both old rope and bagging are limited; that seemingly the production or collection of these materials is not up to normal, and dealers argue that the downtrend recorded in values is merely caused by a slowing up of demand, which they claim will soon disappear the moment paper mills manifest a little more buying interest.

F. o. b. shipping point and ex-dock New York quotations follow:

	New York and Chicago
Gunny, No. 1 domestic	3.60-3.85
Gunny, No. 1 foreign	3.50-3.75
Scrap bagging, No. 1	2.35-2.50
Roofing bagging	1.25-1.35
Wool tares, heavy	3.75-4.00
Wool tares, light	3.50-3.75
Manila rope, No. 1 foreign	4.50-4.75
Manila rope, No. 1 domestic	5.50-5.75
Sisal strings	2.25-2.50
Mixed strings	1.50-1.75

Old Paper

The market for old paper exhibits increased firmness and prices of most grades have moved up to at least slightly higher levels. The improvement, however, appears caused not by any material expansion of demand from consuming quarters, but to unhealthy conditions at the packing end of the industry, as for example a strike among the collectors in New York and Chicago resulting in curtailed collections, with the reduced available supply forcing prices upward. Board manufacturers and other large consumers assert they cannot see their way clear to absorbing supplies in any larger tonnage since they are carrying sizable stocks and since their business does not warrant purchasing in any heavier volume. In fact, prices have been low enough to make buying attractive and there seems little doubt consumers would have increased their purchases long ago if conditions in their own market justified. It is true there has been scant room for profit for dealers under the market prices that have obtained, but this seems due to market conditions over which buyers have no control. It seems a question how the curtailed operations of packers and collectors will work out, whether the artificially reduced supply will serve to keep prices on the slight levels to which they have ascended.

Shavings are quoted at around 3.50 cents per pound for No. 1 hard white, and 2.85 cents for No. 1 soft white shavings f. o. b. shipping points, though substantially higher prices are demanded for special packing of one-cut stock. Old kraft is quoted by dealers at 1.80 cents a pound at shipping points, No. 1 heavy books at 1.05 to 1.15 cents, and ledger stock at 1.50 to 1.75 cents, depending on quality of packing. Folded news is quoted at 55 to 65 cents a hundred pounds at shipping points, and old No. 1 mixed paper at 45 to 55 cents. Prices in the West on the low grades usually are a bit above those ruling in the East.

The following are quotations named by dealers, f. o. b. shipping points:

	New York and Chicago
Hard white shavings, No. 1	3.40-3.60
Hard white shavings, No. 2	3.00-3.25
Soft white shavings	2.70-2.90
Colored shavings	.90-1.00
Heavy book, No. 1	1.05-1.15
Crumpled book, No. 1	.80- .90
Ledger stock	1.50-1.75
Kraft, No. 1	1.70-1.85
Manilas, No. 1	.65- .80

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JOSEPH GATTI President and Treasurer

GATTI Paper Stock Corporation
Formerly with the Gatti-McQuade Co.

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All Grades of Rags and Paper Stock, New Wrapping Paper, Box Board and Cordage

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Western Paper Makers Chemical Company
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Rosin Size, Satin White, Clays, Fillers
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ANIMAL SIZING GLUE STOCK

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FINE WRITING PAPER SIZING

E. F. RUSS COMPANY 287 Atlantic Avenue BOSTON, U. S. A.

White blank news	1.60-1.70
Overissue news, No. 1	.65- .75
Folded news	.55- .65
Sulphite mill wrappings	.70- .80
Mixed paper, No. 1	.45- .55
Common paper	.30- .35

Pulp Wood

Pulp wood is selling freely, according to reports from consuming districts which say that pulp mills are operating on a fairly active scale and are using up stocks at a good rate. This is rather the off season for this commodity but such offerings as are made are finding takers, and at fully maintained prices.

Exports of pulp wood from Canada this year have fallen far short of the last two years, totaling 497,318 cords, valued at $4,564,553, in the first five months of 1926, compared with 634,926 cords of a value of $5,972,198 in the same time of last year, and 562,917 cords of a value of $5,399,314 in 1924.

Mechanical Pulp

The ground wood market appears to be holding its own despite the fact this is the time of the year when grinders are provided with plenty of water and production therefore is greatest. The secret of the price steadiness is that consumption is heavy. Newsprint and other mills are using mechanical pulp in heavy tonnage, with the result supplies available in the open market are limited and producers are enabled to maintain quotations. Grinders point out that there is small profit in ground wood even at prevailing market prices and that consequently it behooves them to hold to the prices quoted irrespective of the volume of demand, which, however, is ample to warrant the values ruling.

Domestic grinders have little pulp to offer in the outside market, and generally ask around $32 a ton f.o.b. pulp mills for prime spruce ground wood. Producers in Canada quote between $29 and $30 a ton at shipping points, though it is possible some buying is being done at slightly under this level, prices depending on the air dry test and the freight to consuming centers. Foreign ground wood of Scandinavian origin is quoted at around $37 a ton for wet pulp ex dock New York.

Production of mechanical pulp in the United States during April amounted to 116,929 tons, showing an appreciable gain over the 95,095 tons produced in the preceding month, according to the American Paper and Pulp Association's monthly statistical report. Mill stocks at the end of April aggregated 131,111 tons, against 115,149 tons at the end of March.

Chemical Pulp

Reports state that most domestic pulp manufacturers are succeeding in keeping well engaged although demand for their product has slowed down to some extent. Evidently mills are well fixed with orders and contracts which absorb the bulk of their output and warrant production on close to maximum capacity. Prices in certain instances have sagged, due to the quieter demand, yet the market is holding its equilibrium in the face of the reduced buying and notwithstanding some softening of the market for foreign pulps.

Probably the easiest item in the market at present is bleached sulphite. There has been no actual drop in prices of this grade but supplies appear somewhat in excess of the demand, and a soft price tone therefore exists. The most popular brands of domestic bleached sulphite are quoted at 4 cents per pound f.o.b. pulp mills, but the probabilities are some manufacturers are shading this price, while the finer qualities are quoted at 4.25 and 4.50 cents and even up to 4.75 cents for bond paper grades. No. 1 strong unbleached sulphite is quoted at 3 cents at pulp plants but it is reported some mills are accepting orders at a dollar or two per ton under this price level, while No. 1 book sulphite holds at 3.25 cents or higher at shipping points. Domestic No. 1 kraft is priced at 3 to 3.25 cents a pound at pulp mills, and bleached soda pulp at 3.75 to 4 cents.

Mills in the United States produced a total of 226,048 net tons of all kinds of wood pulp—mechanical and chemical—in April, representing a gain of 10 per cent over the 208,861 tons produced in March, according to the monthly statistical report issued by the American Paper and Pulp Association in coop-

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For your own good don't fall into the error of thinking that salt is "just salt."

It may have as many disguises as Sherlock Holmes, but *International Salt* can always be identified by its pure, unvarying quality.

That is why it is used in the best industrial families . . . why International Salt is synonymous with high standard results.

Now as to your order. There is a near-to-you International warehouse that ships promptly

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SALT COMPANY, Inc.

Uncle Jake says

YOU cannot gauge the amount of religion in the pews by the horse power of the machines at the door.

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Simply making paper is a mechanical job. Making paper like Bond is an art. Order a trial shipment and then voluntarily and gladly you will be our customer for life.

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KALAMAZOO VEGETABLE PARCHMENT CO.
KALAMAZOO, MICHIGAN

New Papers

Writing—	
White rag	15-40
White sulphite	11-30
Colored rag	15-40
Colored sulphite	10-30
Ledger—	
White rag	16-40
White sulphite	12-30
Colored sulphite	11-30
Colored rag	15-40
Bonds—	
White rag	16-40
White sulphite	9-30
Colored sulphite	9-30
Colored rag	15-40
Book—	
No. 1 S. & S. C.	6.50- 8.00
Machine finished	6.25- 8.00
English finished	6.25- 8.00
Coated and enameled	8.00-14.00
Lithograph, M. F.	8.50-15.00
Newsprint—	
Rolls, contract	3.25- ....
Rolls, transient	3.50- ....
Sheets	3.75- 4.00
Side runs	3.00- 3.25
Cover Stock—	
Coated, both sides	10.25
Coated, one side	10.15
Tissue—	
No. 1 white, 20x30	.80- .90
No. 2 white, 24x36	.75- .80
No. 1 manila, 24x36	.75- .80
Kraft	.90- 1.00
Wrapping—	
No. 1 Kraft	6.00- 6.50
No. 2 Kraft	5.00- 5.50
Boards—	New York and Chicago
Solid news	40.00-45.00
Straw	52.50-57.50
Plain chip	35.00-37.50
White coated chip	50.00-55.00
Manila coated chip	50.00-52.50
Binder's board	70.00-75.00

Chemical Pulp

(*Continued from page 717*)

eration with the United States Pulp Producers' Association. Production of chemical pulps was 109,119 tons, against 113,866 tons in March. Mill stocks of all grades amounted to 149,830 tons at the end of April, contrasted with 134,714 tons at the end of the preceding month.

Quotations f.o.b. pulp mills are as follows:

Bleached sulphite	4.00-4.75
Easy bleaching sulphite	3.20-3.40
Unbleached sulphite, No. 1 strong (news grade)	2.90-3.15
Unbleached sulphite, No. 1 book	3.25-3.50
Soda pulp, bleached	3.75-4.00
Mitscherlich, unbleached	3.25-3.50
Kraft, No. 1	3.00-3.25
Screenings, refined	1.60-1.80

Chemicals

The outstanding feature in papermaking chemicals is the strong quotable position of casein and the high prices ruling on this article. Importers quote 17.50 cents a pound and higher, duty paid, for foreign casein; in fact, some state they would not book orders at this price basis unless they had the product in hand with which to cover. Domestic casein is quoted between 16 and 17 cents a pound at shipping points. Soda ash is steady at 1.38 cents per pound in bags f.o.b. works, and caustic soda continues to be quoted at 3.10 to 3.15 cents a pound.

Average quotations are as follows:

Alum, lump ammonia	3.50- 3.75
Alum, lump starch	3.75- 4.00
Blanc fixe, powder	4.00- 4.25
Bleaching powder	2.00- 2.40
Brimstone (long ton, at mine)	18.00-19.00
Casein (duty paid)	16.00-18.00
Caustic soda, spot delivery	3.10- 3.15
China clay, domestic washed	8.00-10.00
China clay, foreign	13.00-20.00
Rosin, grade E	13.70- ....
Satin white	2.00- 2.25
Soda ash, 58 per cent light (bags)	1.38- ....
Starch, papermakers', in bags	3.32- ....
Talc (ton)	15.00-18.00

Permutit Company Wins Water Softener Patent Suit

The United States patent 1195923, issued to Robert Gans and owned by the Permutit Company, New York, is a basic patent covering apparatus for softening water by the use of zeolites. It has been sustained by the following courts:

1. U. S. District Court, Western District of New York.
2. U. S. Circuit Court of Appeals, Second Circuit.
3. U. S. District Court, Southern District of New York.
4. U. S. Circuit Court of Appeals, Sixth Circuit.

Thus this patent has been sustained by two Federal district judges and by two circuit courts of appeals. In the decision of June 8th, 1926, of the Court of Appeals, Sixth Circuit, it is stated in part:

> "Rarely is there a case where a new art and industry are founded solely upon and grow entirely from a patent, so clearly as in this case.
>
> "It is not to be denied that the entire commercial activities of all makers in this country have grown out of the commercial exploitation here by the owners of the patent.
>
> "It is clear that the patent should be treated with all permissible liberality, and that the courts will go as far as they rightly can, in the way of overlooking technical defects and overruling defenses which are not clearly fatal."

So far suits have been brought against three manufacturers employing three different designs of apparatus, and in each case the apparatus has been held to infringe the above patent. The Permutit Company is determined to bring suit against every infringing manufacturer, and therefore suggests that anyone who is contemplating the purchase of water-softening apparatus consult his own lawyer to find out if the apparatus offered him infringes this patent.

Copies of all the decisions may be obtained from the Permutit Company, 440 Fourth avenue, New York, N. Y.

Men employees of the Tennessee Box Co., Johnson City, Tenn., have joined with executives of that company in acquiring a group life insurance policy issued by the Prudential Insurance Co. of America. The policy provides that the workers themselves pay a part of the premiums and the employing company the remainder. Each worker is covered for from $1,000 to $2,500, according to the position held.

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"HAFSLUND BEAR"
Bleached Sulphite

"FORSHAGA"
Bleached Sulphite

"HURUM SPECIAL"
Extra Strong Kraft

"BAMBLE"
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The easiest way to survive competition is to reduce the cost of production.

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E. B. Eddy Company, Ltd., Hull, Canada

Canadian Kraft Limited, Three Rivers, Canada
Dealers in Wayagamack Kraft Pulp

Howard Smith Paper Mills, Montreal, Quebec
EASTERN AGENTS of Sulphite Pulp. Made by
Port Huron Sulphite & Paper Co., Port Huron, Mich.

EXPORTS

The steady upward trend which has been a noticeable feature of paper and board exports since the first of the year continued through the month of April, aggregate shipments out of the United States reaching a total value of $2,544,596 in that month, an increase of approximately $195,000 over the preceding month and of $462,000 over the corresponding month in 1925, according to the Paper Division of the Department of Commerce.

With few exceptions, shipments of all classes of paper showed a marked improvement in April. Exports of newsprint and wrapping paper appear to have recovered from the weakness observable in the February shipments and again registered an increase over the previous month, the former by 62 per cent and the latter by 12 per cent, as well as increases in both cases of 25 per cent in comparison with the corresponding month last year. Proportionately greater gains, however, were made by nearly all lines of finer papers. Shipments of writing paper were four times as large and shipments of surface-coated papers nearly three times as large during April as during the same month in 1925, while exports of tissue and crepe papers were from 30 to 50 per cent heavier than during the preceding month or during April, 1925.

Not quite as good a showing was made by board shipments, which failed to attain the March level, although combined exports were 70 per cent higher than those of the corresponding month last year. Outside of book paper, exports of which still show a slight downward trend, decreases in the April shipments were confined largely to paper manufacturers and specialties. Of the latter group, shipments of the two leading items, paper bags and paper boxes and cartons, were from 10 to 15 per cent higher than during April a year ago, although the latter underwent a decrease of 23 per cent in comparison with the preceding month.

Exports of newsprint from the United States in April totaled 4,784,003 pounds, valued at $228,505, against 3,855,116 pounds of a value of $168,423, exported in the similar month of 1925, while exports of uncoated book paper in April were 1,441,883 pounds, valued at $141,546, compared with 1,485,008 pounds of a value of $162,927 in April, 1925. Wrapping paper exports in April amounted to 3,186,829 pounds, valued at $232,057, against 2,519,187 pounds of a value of $188,686 a year ago, and tissue and crepe paper shipments totaled 415,-124 pounds, valued at $98,921, in April, contrasted with 314,-624 pounds of a value of $79,656 in the same month of last year.

Box board was exported in April to the amount of 3,490,391 pounds, valued at $101,073, against 1,446,357 pounds of a value of $60,650 in April a year ago, while shipments of other paper board and strawboard were 3,641,063 pounds, valued at $182,534, compared with 2,760,021 pounds of a value of $125,961 in April, 1925.

IMPORTS

Wood Pulp

While expressions of opinion differ concerning the probable future position of the imported wood pulp market, there is one thing on which members of the trade agree generally and that is there is little trade activity of importance at present. If anything there is a larger number of sellers of pulp in evidence than buyers; consumers in general seem little desirous of augmenting their holdings and are keeping very much out of sight as buyers, with such demand as is developing of piecemeal variety and coming from paper or board manufacturers who are taking small lots now and then against actual requirements. Under the circumstances it might be expected values would react downward with somewhat of a bang; it is true the spot market has weakened and limited amounts of pulp are being offered from dock or warehouse in this country at price recessions, but generally the market tone is steady and the prices from abroad are well maintained. Pulp producers in Scandinavia and other parts of Europe are well sold up for the remainder of this year and also to a considerable degree for 1927; obviously, it is to their advantage to sustain prices, and they are holding to previously quoted rates with little or no change.

Foreign pulps can be and are being bought—in some quantity, at least—at American Atlantic ports at cheaper prices than obtain anywhere else in the world. The supplies being sold at concessions constitute surplus lots which importers or consumers have in hand and for which they experience difficulty locating an outlet. Latest statistics show that manufacturers in Sweden have disposed of 88 per cent of their unbleached sulphite and 70 per cent of their bleached sulphite production for this year, and also have sold on contract 240,000 tons of both grades for next year; it is easy to understand why they have adopted so strong an attitude regarding prices and are quoting firm rates.

Bleached sulphite is quoted from 3.65 cents a pound upwards ex dock New York and other American Atlantic ports for prime quality, some special mill brands being held for 4 cents and higher. Prime strong unbleached sulphite is quoted at around 3.10 cents for forward shipment from abroad, but it is reported spot pulp of this kind has been purchased down to 2.90 cents ex dock, and possibly at a little less. Prime standard Swedish kraft pulp is quoted from abroad at 3.10 to 3.20 cents landed here, while some spot sales have been recorded at 3 cents and lower. Prime easy bleaching sulphite is quoted at about 3.20 cents per pound, and ordinary unbleached Mitscherlich sulphite at 2.90 to 3 cents.

Imports of wood pulp into the United States during April totaled 91,528 long tons of chemical pulp, valued at $6,158,890, showing a little increase over the 88,403 tons of a value of $5,964,039 imported in the preceding month, and also a gain over the 79,639 tons of a value of $5,030,574 imported in April, 1925. April importations brought the total for the first four months of this year up to 381,661 long tons, giving a monthly average of 95,415 tons, as compared with a monthly average of 95,415 tons imported in the corresponding time a year ago. Imports of ground wood in April were 14,166 tons, making a total of 79,075 tons in the first four months of 1926 or a monthly average of 19,768 tons, contrasted with a monthly average of 20,236 tons in the same period last year.

Current market quotations ex dock New York and receipts at the port of New York during June follow:

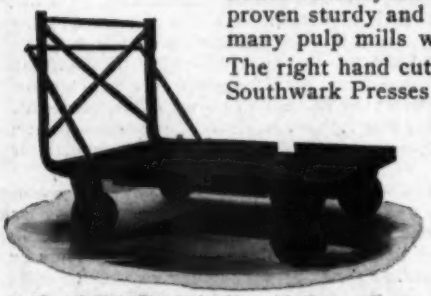
Bleached sulphite, No. 1	3.65- 4.00
Unbleached sulphite, strong, No. 1	2.90- 3.15
Unbleached sulphite, No. 2	2.75- 3.00
Easy bleaching sulphite	3.15- 3.40
Mitscherlich unbleached, genuine	3.25- 3.50
Mitscherlich unbleached, ordinary	2.90- 3.10
Kraft, standard Swedish	2.90- 3.15
Ground wood, per ton (dry)	36.00-38.00

Johaneson, Wales & Sparre, 300 bls. from Gothenburg, 2,790 from Hernosand and 7,825 Sundsvall; Price & Pierce, 5,640 bls. from Gothenburg; National City Bank, 400 bls. from Hamburg and 3,875 Sundsvall; Borregaard Co., 2,100 bls. from Greaker; J. Anderson & Co., 5,982 bls. from Greaker, 6,425 Soderhamn, 135 Breman and 500 Gothenburg; Central Union Trust Co.,

SOUTHWARK HYDRAULIC PRESSES

for Pulp, Sulphite, Baling, Etc.

HYDRAULIC PUMPS, VALVES, FITTINGS, SHOCK ABSORBERS, PULP TRUCKS, ETC.



Southwark Pulp Truck, for Use with Presses Shown at the Right. Saves Time and Labor

Southwark Hydraulic Presses for dehydrating pulp have proven sturdy and efficient machines in every one of the many pulp mills where we have installed them.

The right hand cut shows an installation of four 600-ton Southwark Presses in a large pulp and paper mill. These presses are designed for use with Southwark Pulp Trucks, the trucks are loaded and run under the press, the pulp being compressed directly on the truck.

This feature gives fast operation, saves labor and eliminates curbs, boxes or other containers on the press.

Four 600-Ton Southwark Pulp Presses, Minnesota & Ontario Paper Co., International Falls, Minn.

SOUTHWARK FOUNDRY AND MACHINE CO.

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400 Washington Ave.
PHILADELPHIA, PA.

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343 S. Dearborn St.

MITTS & MERRILL GRAVITY FEED SHREDDER

Reduces Paper Stock

Magazines, books, old paper and boxboard, frozen or dried pulp laps run through the Mitts & Merrill Gravity Feed Shredder are reduced to particles which hydrate readily when put into the beaters.

Built in six sizes with spouts ranging from 18" to 45" wide

Reduces Costs

Because shredding in the Mitts & Merrill Gravity Feed Shredder expedites hydration in the beaters there is considerable saving made in power. Thus we see that the shredder here illustrated reduces costs while it is reducing paper stock.

We will be glad to furnish details upon request.

We also build a 100% efficient "Hog" to reduce pulp mill bark and wood refuse

See pages 372 and 373 in the 1926 Paper and Pulp Mill Catalogue

MITTS & MERRILL 1013 Tilden St. **SAGINAW, MICH.**

2,150 bls. from Greaker and 4,440 Oslo; Nilsen, Lyon & Co., 1,150 bls. from Hamburg; French-American Banking Corp., 1,506 bls. from Rotterdam; Bulkley, Dunton & Co., 365 bls. from Rotterdam, 5,375 Soderhamn, 3,875 Gefle, 500 Iggesund, 900 Hernosand, 3,675 Bremen, 2,750 Sundsvall and 2,500 Sandarne; Irving Bank-Columbia Trust Co., 947 bls. from Bremen; Pagel, Horton & Co., 3,000 bls. from Hernosand and 8,500 Gefle; Scandinavian Pulp Agency, 6,795 bls. from Skutskar, 1,524 Gothenburg and 6,170 Sundsvall; Tidewater Paper Mills Co., 25,746 bls. ground wood from Liverpool, N. S., and 23,536 bls. ground wood from Sheet Harbor, N. S.; E. M. Sergeant Co., 2,100 bls. from Hernosand, 1,275 Oslo and 299 Gothenburg; Buck, Kiaer & Co., 3,138 bls. from Oslo; Chemical National Bank, 300 bls. from Oslo; M. Gottesman & Co., 1,500 bls. from Sundsvall and 1,330 Rotterdam; Lagerloef Trading Co., 161 bls. from Hango; Robert Gair Co., 9,712 bls. and 576 half bales from Bridgewater, N. S.; Mead Pulp & Paper Co., 13 bls. from Havre; Birn & Wachenheim, 50 bls. from Rotterdam; Girard National Bank of Philadelphia, 400 bls. from Oslo; Waterfalls Paper Mills, 6,769 bls. from Trieste; W. Hartmann & Co., 630 bls. from Hamburg; Banca Commerciale Italiana Trust Co., 1,248 bls. from Hamburg; Sanitary Textile Co., 50 bls. from Hamburg; Order, 6,171 bls. from Bremen, 5,486 Antwerp, 4,707 Helsingfors, 695 Hango and 1,829 Hamburg.

Paper Stock

Importations of papermaking material other than wood pulp into the United States during June were not more than normal, if they reached normal volume, judging from arrivals through the port of New York. There were some fair sized shipments of rags, yet the figures would show less than usual quantities of rag stock were imported. Old rope receipts were moderately large, while old bagging continued to come into the country in fair tonnage.

Imports of papermaking rags in April, 1926, were 52,125,222 pounds, according to official figures issued by the Department of Commerce, compared with 42,677,625 pounds imported in the same month last year. Imports of rags during the ten months ended April last were 463,454,488 pounds, against 504,364,617 pounds in the similar period a year ago.

Imports of all kinds of paper stock through the port of New York in the month of June, 1926, follow, these data being taken from manifests of steamers arriving at that port during the month:

Old Rope

Brown Bros. & Co., 374 bls. and 1,195 coils; Ellerman's Wilson Line, 514 coils; S. Birkenstein & Sons, 35 bls.; E. J. Keller Co., 144 bls.; Central National Bank of Savings & Trust Co., 173 coils and 4 bls.; F. Boccardo, 168 coils; Equitable Trust Co., 97 coils; Chase National Bank, 50 coils; Marx Maier Paper Mill Supply Corp., 24 bls.; W. Schall & Co., 43 bls.; Order, 104 coils and 261 bls.

Old Bagging

National Bank of Commerce, 15 bls.; Sterling Mill Supply Co., 99 bls.; Marx Maier Paper Mill Supply Corp., 214 bls.; Royal Manufacturing Co., 267 bls.; Chatham & Phenix National Bank, 474 bls.; Equitable Trust Co., 247 bls.; State Bank, 760 bls.; Amsinck, Sonne & Co., 67 bls.; Vacuum Co., 75 bls.; Grace National Bank, 67 bls.; Girard National Bank of Philadelphia, 85 bls.; Stone Bros. Co., 72 bls.; E. Butterworth & Co., 224 bls.; Daniel M. Hicks, Inc., 114 bls.; Darmstadt, Scott & Courtney, 56 bls.; E. J. Keller Co., 360 bls.; Manufacturers Trust Co., 400 bls.; Guaranty Trust Co., 211 bls.; Central National Bank of Savings & Trust Co., 124 bls.; L. H. Abenheimer, 71 bls.; Chase National Bank, 29 bls.; British Bank of South America, 110 bls.; Order, 300 bls.

Rags

Stone Bros. Co., 192 bls.; George M. Graves Co., 331 bls.; Sterling Mill Supply Co., 52 bls.; S. Silberman Co., 826 bls.; Victor Galaup, Inc., 204 bls.; E. Butterworth & Co., 38 bls.; E. J. Keller Co., 889 bls.; Essbeekay Importing & Exporting Co., 22 bls.; C. R. Spence & Co., 15 bls.; Robert Blank, 444 bls.; A. H. Searle, Inc., 510 bls.; Daniel I. Murphy, Inc., 243 bls.; Daniel M. Hicks, Inc., 132 bls.; Atlas Wast Mfg. Co., 10 bls.; Royal Mfg. Co., 114 bls.; J. H. Faunce, 69 bls.; E. Mayer,

ALKALI

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The Diamond Alkali Company maintains a staff of specialized chemists who know the alkali requirements of all industries—a knowledge that is reflected in the high quality of all Diamond products.

Old quality standards have been raised by their unceasing efforts—until today DIAMOND ALKALIES are recognized as the standard of quality by which others are measured.

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Special Alkalies

BUILT FOR HARD WORK, LONG LIFE, AND NO WORRY TO THE OWNER

ZAREMBA EVAPORATORS

HAVE ESTABLISHED AN ENVIABLE REPUTATION

IN THE CONCENTRATION OF

SODA BLACK LIQUOR—SULPHATE BLACK LIQUOR
SULPHITE WASTE LIQUOR

DUE TO

WIDE EXPERIENCE—THOROUGH ENGINEERING—PAINSTAKING CONSTRUCTION

ZAREMBA COMPANY
506 CROSBY BLDG. BUFFALO, N. Y.

NEW YORK OFFICE: 95 LIBERTY STREET

Watson, Frye Company
BATH, MAINE

Manufacturers of

Wood Pulp Grinders with 3 and 4 pockets. All Sizes.

Wet Machines, Deckers, also Combination, Wet Machines and Deckers.

Diaphragm Screens, Six to Eighteen Plate, inclusive.

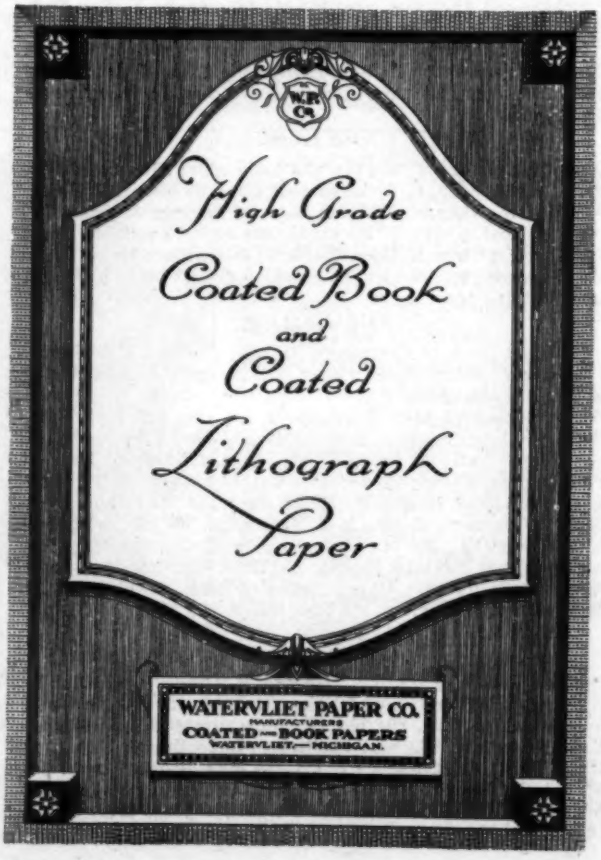
Also

Union Wet Machines for Sulphite and Sulphate Pulp, 30 tons production Extra Dry.

Chippers, 48″, 84″, and 90″ with 3 and 4 knives.

Cylinder moulds all sizes.

Bronze and Lead Fittings, for sulphite mills, and also all kinds of Iron, Brass, Bronze, and Composition Castings.



93 bls.; Yeskel Supply Co., 200 bls.; Castle & Overton, 125 bls.; Robert Bishop Mfg. Co., 369 bls.; J. A. Brookman Co., 38 bls.; Irving Bank-Columbia Trust Co., 47 bls.; National City Bank, 101 bls.; American Exchange-Pacific National Bank, 5 bls.; Chase National Bank, 10,301 bls.; Bowery & East River National Bank, 80 bls.; Bank of New York & Trust Co., 274 bls.; Anglo-South American Trust Co., 152 bls.; Central National Bank of Savings & Trust Co., 291 bls.; Union National Bank of Philadelphia, 52 bls.; Equitable Trust Co., 52 bls.; Girard National Bank of Philadelphia, 427 bls.; Chemical National Bank, 16 bls.; Fidelity International Trust Co., 46 bls.; Barrett Co., 129 bls.; Bernard, Judae & Co., 43 bls.; A. W. Fenton, Inc., 2,683 bls.; Amsinck, Sonne & Co., 91 bls.; Brown Bros. & Co., 196 bls.; American Express Co., 45 bls.; G. W. Sheldon & Co., 51 bls.; Goldman, Sachs & Co., 39 bls.; R. F. Downing & Co., 61 bls.; Order, 1,891 bls.

Miscellaneous Paper Stock

Chase National Bank, 168 bls.; Equitable Trust Co., 51 bls.; L. H. Abenheimer, 286 bls.; Milton Snedeker Corp., 232 bls.; Hughes-Fawcett Co., 24 bls.; National City Bank, 339 bls.; Marx Maier Paper Mill Supply Corp., 176 bls.; Salomon Bros. & Co., 185 bls.; Maurice O'Meara Co., 24 bls.; Girard National Bank of Philadelphia, 58 bls.; Van Oppen & Co., 15 bls.; Manufacturers Trust Co., 37 bls.; Kidder-Peabody Acceptance Corp., 150 bls.; Order, 500 bls.

Wrapping

Borregaard Co., 208 reels and 247 bls. from Gothenburg; Thomas Barrett & Son, 132 bls. and 74 reels from Gothenburg; Herman Behr & Co., 2 bls. from Gothenburg; J. E. Bernard & Co., 2 cs. from Hamburg; Robert Wilson Paper Corp., 50 cs. and 12 reels from Glasgow; Safety Cable Co., 39 reels from Glasgow; Blauvelt-Wiley Paper Mfg. Co., 173 bls. from Glasgow; F. C. Strype, 12 cs. from Antwerp; Okonite Collender Cable Co., 501 reels from London; International Forwarding Co., 29 cs. from Hamburg; J. B. Mast & Co., 33 cs. from Genoa; Wilkinson Bros. & Co., 22 bls. from Gothenburg, and 56 bls. from Antwerp; Arkell Safety Bag Co., 101 rolls and 90 bls. from Gothenburg; C. K. MacAlpine & Co., 20 bls. from Gothenburg; M. M. Cohen, 43 bls. and 29 rolls from Gothenburg; C. Steiner, 22 cs. from Hamburg; J. P. Heffernan Paper Co., 3 bls. from Hamburg; A. Price & Son, 12 cs. from Rotterdam.

Cigarette

American Tobacco Co., 1,300 cs. from Bordeaux; R. J. Reynolds Tobacco Co., 1,340 cs. from St. Nazaire; DeManduit Paper Corp., 446 cs. from St. Nazaire; P. J. Schweitzer, 140 cs. from Genoa and 29 cs. from Havre; British-American Tobacco Co., 40 cs. from Havre; Standard Products Corp., 291 cs. from Havre; M. Spiegel & Sons, 21 bls. from Genoa and 3 cs. from Bordeaux; Gluckman & Struch, 6 cs. from Bordeaux; Southern Pacific Co., 3 cs. from Havre; Surbrug Co., 15 cs. from Havre.

Paper

Imports of paper into the United States are keeping up to a fairly high level, judging from latest available statistical data. Receipts through the port of New York during June were up to par in comparison with recent months, according to unofficial data secured from manifests of vessels reaching that port during the month. There were some good sized shipments of wrapping paper, and also usual quantities of cigarette, hanging, filter and writing papers imported. Arrivals of printing paper, however, showed a falling off. Imports of paper of all kinds into the United States in April, 1926, were valued at a total of $12,584,759, according to official figures issued by the Department of Commerce, compared with imports valued at $9,911,957 in the same month in 1925.

Imports of paper of all kinds through the port of New York in June, these data being taken from manifests of steamers arriving at that port last month, follow:

Printing

P. C. Zuhlke, 171 cs. from Antwery; B. F. Drakenfeld & Co., 204 cs. from Liverpool; Oxford University Press, 12 cs. from Liverpool; J. P. Heffernan Paper Co., 20 bls. from Hamburg; Herrmann Paper Co., 10 cs. from Hamburg; E. Dietzgen & Co., 62 cs. from Hamburg; Martin & Bechtold, 8 cs. from

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Cut down *excessive* wrapping paper investment. Why carry two wrapping paper lines for one wrapping paper *purpose?*

MOSINEE

presents a perfect wrapping paper, weight and strength for each wrapping purpose. Made in all weights from 15 pounds to 100 pounds basis. The one complete, standardized and economical line of wrapping paper sold.

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"The Wrapper that Delivers the Goods"

Sulphur

A FIRST REQUISITE

IN

Paper Making

Large Production
Ample Reserves
Prompt Deliveries
Purity 99½%

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Mine: Gulf, Matagorda County, Texas

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"Excelsior" Felts

For EVERY GRADE of PULP & PAPER

We continue to maintain at the top the quality of Excelsior Felts, as we have done since we, as pioneers, made *the first endless paper machine felts manufactured in America.*

Seamless felts for fast running.
Satin Style felts for finish.
Special felts to meet every condition.
Send us your felt problems.

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IMPROVED BADGER BLACK LIQUOR EVAPORATORS

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NORTHWEST
PAPER CO.
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NON-FOAMING

MAXIMUM
STEAM ECONOMY

NO ENTRAINMENT

SODA and
SULPHATE
PROCESSES

E. B. BADGER & SONS CO., Boston, U. S. A.

See page 316 in the 1925 Paper and Pulp Mill Catalogue

Bremen; Perry, Ryer & Co., 202 cs. from Glasgow; Perkins-Goodwin Co., 92 cs. from Hamburg and 79 rolls from Rotterdam; C. Steiner, 47 cs. from Rotterdam; Continental Typefounders Association, 12 cs. from Hamburg; Keuffel & Esser Co., 120 rolls from Hamburg; Order, 663 reels and 30 cs. from Bremen, 388 cs. and 1,622 reels from Hango, 496 bls. from Helsingfors, and 4,543 rolls from Corner Brook.

Writing

Guibont Freres & Co., 27 cs. from Havre and 3 cs. from Southampton; G. W. Sheldon & Co., 5 cs. from Hamburg; White-Burbank Paper Co., 3 cs. from Glasgow; F. L. Kraemer & Co., 6 cs. from London; S. Stern, 10 bls. from London; Sternberg & Co., 20 cs. from Southampton; Bank of the Manhattan Co., 27 cs. from Southampton; W. J. Byrnes, 5 cs. from Havre; Eleto Co., 9 cs. from Havre; American Express Co., 12 cs. from Rotterdam; Order, 19 cs. from Trieste.

Drawing

Keuffel & Esser Co., 10 cs. from Southampton and 50 cs. and 69 rolls from Hamburg; H. Reeve Angel & Co., 18 cs. from London; E. Dietzgen & Co., 38 cs. from Hamburg; Order, 2 cs. from London.

Filter

E. Fougera & Co., 52 bls. from Bordeaux; J. Manheimer, 83 bls. from Southampton; C. Sleicher & Schull Co., 11 cs. from Hamburg.

Tissue

F. C. Strype, 53 cs. from Liverpool; S. Gilbert, 12 cs. from Rotterdam.

Hanging

C. A. Haynes & Co., 84 bls. from London, and 19 cs. from Southampton; F. J. Emmerich & Co., 10 bls. from Liverpool, 3 bls. London and 8 bls. Hamburg; Rohner, Gehrig & Co., 134 bls. from Antwerp; R. F. Downing & Co., 28 cs. from London; Bendix Paper Co., 17 cs. from Hamburg; Panama Pacific Lines, 12 cs. from London; F. & R. Trading Co., 370 bls. from Antwerp; W. H. S. Lloyd & Co., 11 cs. from Liverpool.

Photo

P. C. Zuhlke, 275 cs. from Antwerp; Gevaert Co. of America, 95 cs. from Antwerp; Globe Shipping Co., 192 cs. from Bremen; J. J. Gavin & Co., 6 cs. from Liverpool; Order, 171 cs. from Antwerp and 9 cs. from Bremen.

Board

Fiber Case & Novelty Co., 98 bls. from Gothenburg; Bendix Paper Co., 61 cs. from Hamburg; Adrian Vuyck, 1,928 rolls from Rotterdam; Guaranty Trust Co., 39 rolls from Rotterdam; A. Leunis & Co., 36 cs. from Hamburg; Metropolitan Import & Mfg. Co., 76 cs. from Hamburg; H. H. Ayer Co., 5 cs. from Havre; J. P. Heffernan Paper Co., 104 rolls from Rotterdam; Lowry & Lowry, 7 bls. from Gothenburg; Davies, Turner & Co., 17 cs. from Liverpool; Devoe & Raynolds Co., 6 cs. from London; Maurice O'Meara Co., 200 pkgs. from Rotterdam; Haas Bros., 242 rolls from Rotterdam; Perkins-Goodwin Co., 6 reels from Rotterdam; Seeley Tube & Box Co., 15 reels from Rotterdam.

Miscellaneous

Bernard, Judae & Co., 2 cs. from Gothenburg; Japan Paper Co., 5 cs. from Southampton, 21 cs. Havre, 10 cs. Genoa and 3 cs. Rotterdam; Whiting-Patterson Co., 25 cs. from Southampton, 56 cs. London and 6 cs. Hamburg; H. De Mangin Co., 9 cs. from Havre; Guibont Freres Co., 2 cs. from Havre; Keller-Dorian Paper Co., 23 cs. from Havre and 23 cs. Southampton; Tice & Lynch, 3 cs. from Havre; C. W. Williams & Co., 6 cs. from Antwerp; G. W. Sheldon & Co., 4 cs. from London and 3 cs. Southampton; J. Raber, 6 cs. from Southampton; Equitable Trust Co., 20 cs. from Hamburg; E. Dietzgen & Co., 159 cs. from Hamburg and 32 cs. Rotterdam; F. C. Strype, 216 cs. from Hamburg; S. Gilbert, 14 cs. from Rotterdam; Globe Shipping Co., 6 cs. from Rotterdam; Heemsoth, Basse & Co., 33 pkgs. from Rotterdam; Perry, Ryer & Co., 22 cs. from Bremen and 74 cs. Glasgow; Hensel, Bruckman & Lorbacher, 2 cs. from Bremen; Birn & Wachenheim, 4 cs. from Mollendo Interna-

Starch

ECONOMY can never be mistaken for cheapness. In the matter of sizing material, starch is cheaper than an all-glue size, yet the results are identical—in fact, the paper made with starch sizing is stronger.

FOX HEAD NIAGARA
SPECIAL PAPER

Our experts can show you how these starches can be used advantageously in your mill. They will gladly call on request.

Corn Products Refining Company
17 Battery Place New York

Starch

Try Hercules Rosin

IF YOU are not already using Hercules Wood Rosin for your paper size, you may find it profitable to compare its quality and suitability with any other rosin on the market.

HERCULES POWDER COMPANY
(INCORPORATED)
941 Market Street, Wilmington, Delaware

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Costly Equipment Should Have Adequate Protection

—against chemicals, acid fumes and wet and damp conditions.

BITUMASTIC SOLUTION offers you protection of this character. It is unaffected by caustic and chlorine fumes so generally present in paper mills. It fully protects steel surfaces against all acids and alkalies. And it forms a water-proof coating which eliminates all danger of rust.

Durability, economy, resistance to extreme temperatures, and attractive appearance are other qualities which make BITUMASTIC SOLUTION the most suitable coating for use on paper mill equipment.

SINCE **BITUMASTIC** 1854

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WAILES DOVE-HERMISTON CORPORATION
17 BATTERY PLACE, NEW YORK

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THE DRAPER FELT

Unexcelled for strength, openness, resiliency, and general running qualities. Made to meet the most exacting conditions on all types of machines and all kinds of papers. Only one grade and that the highest.

Made by

DRAPER BROTHERS COMPANY

CANTON, MASS.

Woolen Manufacturers Since 1856

REPRESENTATIVES

L. H. BREYFOGLE, Kalamazoo, Mich. — INTERNATIONAL TRADING CO., Philadelphia, Pa.

tional Forwarding Co., 37 cs. from Hamburg and 9 cs. Rotterdam; Chase National Bank, 5 cs. from Havre; Coenca-Morrison Co., 5 cs. from Hamburg; New York & Porto Rican Railroad Co., 100 rolls from San Juan; D. C. Andrews & Co., 57 cs. from Hamburg; Kolesch & Co., 5 cs. from Rotterdam; J. J. Shore & Co., 17 cs. from Bremen; C. H. Robold & Co., 9 cs. from Liverpool; Borden & Riley Paper Co., 13 cs. from Antwerp; H. D. Catty Co., 4 cs. from Antwerp and 3 cs. Hamburg; Globe Shipping Co., 8 cs. from Rotterdam; F. L. Kraemer & Co., 3 cs. from London; P. H. Petry & Co., 3 cs. from Hamburg; Irving Bank-Columbia Trust Co., 10 cs. from Hamburg.

Foreign Trade Opportunities

Additional information regarding the following foreign trade opportunities issued by the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce may be obtained from the Bureau in Washington, D. C., or its branch offices. It is requested that the number of the inquiry be given at all times.

No. 20671—Paper cup manufacturing machinery and equipment. Montevideo, Uruguay. Purchase desired.

No. 20689—Canvas and felt for papermaking. Tokio, Japan. Purchase desired.

No. 20780—Board, whitewood pulp. Port Said, Egypt. Purchase desired.

No. 20729—Machinery for making paper bags. Panama City, Panama. Purchase desired.

No. 20773—Wrapping paper. Buenos Aires, Argentina. Agency desired.

No. 20798—Pulp and paper mill equipment. Halifax, Nova Scotia. Agency desired.

No. 20868—Wrapping and waterproof packing papers. London, England. Purchase and agency desired.

No. 20906—Pulp and papermaking machinery. Campbellton, Canada. Agency desired.

No. 20945—Paper bags, kraft and sulphate. Swansea, Wales. Purchase desired.

No. 20935—Paper of all kinds. Teheran, Persia. Purchase desired.

No. 20973—Paper spoons. Winnipeg, Canada. Purchase and agency desired.

No. 20944—Wall papers, cheap and medium priced. London, England. Agency desired.

No. 20973—Wrapping paper and imitation parchment. Winnipeg, Canada. Purchase and agency desired.

No. 20945—Wrapping paper, real and imitation kraft, and greaseproof demicrown. Swansea, Wales. Purchase desired.

No. 20946—Wrapping papers. Nantes, France. Purchase desired.

Difficult Accounts Cost Millions Yearly

Waste in handling difficult accounts costs American business men nearly a billion dollars yearly, J. H. Tregoe, executive manager of the National Association of Credit Men, says in a statement issued to the association's 30,000 members.

"It is my belief," Mr. Tregoe said, "that a great deal of cost is nothing more than waste through unintelligent methods in handling difficult and involved accounts. We should look with amazement at a concern that turned its merchandise over to anyone to be sold at any price. Yet there are hundreds of concerns that never follow up or control their accounts with the same expert care that usually characterizes the sales department.

"* * * Combinations of minor costs have played more havoc with our abilities to keep operating costs within reasonable control than what we are accustomed to call major causes. When an account is placed on a ledger, an obligation then rests in the concern to have that account redeem itself in full, or, if disaster occurs, to have the shrinkage just as slight as human efforts can make it."

The Hercules Powder Co., Wilmington, Del., announces that effective July 1, Shibley & Ossman, Inc., 615 Penton Bldg., Cleveland, will handle the naval stores business for the Cleveland district.

Overhead Lines in paper plant

Overhead Pipe Lines

SUCCESSFUL overhead pipe lines have been made possible with "Michigan" Combination Steel and Wood Pipe. A special steel flange fitting eliminates the ordinary leaks and troubles.

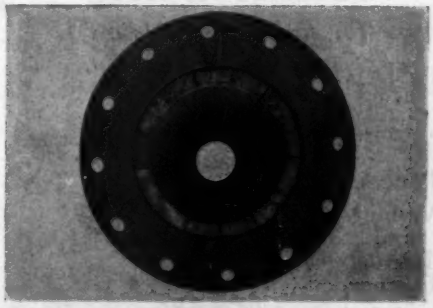
This flange fits over the tenon of the pipe and is used simply as a connection. No metal is exposed to the liquid, which keeps it free from specks of rust to harm the paper.

"Michigan" Combination Steel and Wood Pipe is made of seasoned wood, reinforced with spirally wound steel bands. The steel exterior is protected by two coats of asphaltum, applied hot. There is no chance for corrosion or bursting under pressure.

"Michigan" pipe is stronger, more durable, and has 20% greater carrying capacity than iron pipe.

The number of paper mills using "Michigan" pipe is increasing daily. It is found best for conveying white water, sulphite, ground wood and pure water.

Send us your blueprints and we will gladly furnish estimates on pipe and fittings to suit your requirements.



End view of Special Flange Coupling. Note metal outside

Tell us about your piping problem. If necessary, one of our engineers will gladly call and go over it with you. Remember, every piece of pipe and every bit of work is guaranteed.

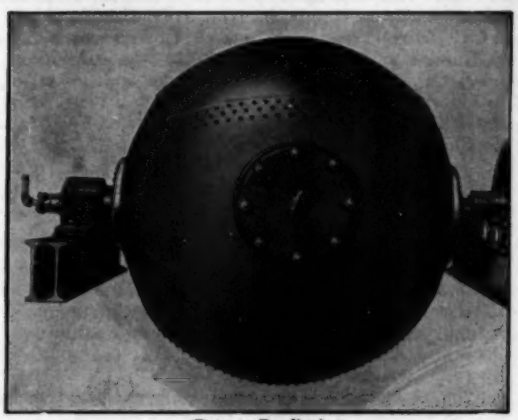
MICHIGAN PIPE CO.

Dept. 17 BAY CITY, MICH.

BIGGS
Improved Rotary Bleaching Engine

This new practical method makes possible many, and marked economies in the production of pulp.

1. Handles all consistencies up to 35%.
2. Bleaches 4 tons per hour at a density of 15-20%, using only 6-8 H. P.
3. Saves chlorine bleaching compound.
4. Assures high-grade and standard production.



(Patents Pending)

These advantages are all results of advanced Biggs design. Built to last and to operate continuously at loads far over their rated capacities.

THE BIGGS BOILER WORKS COMPANY

Seneca Place and Case Ave. Akron, Ohio

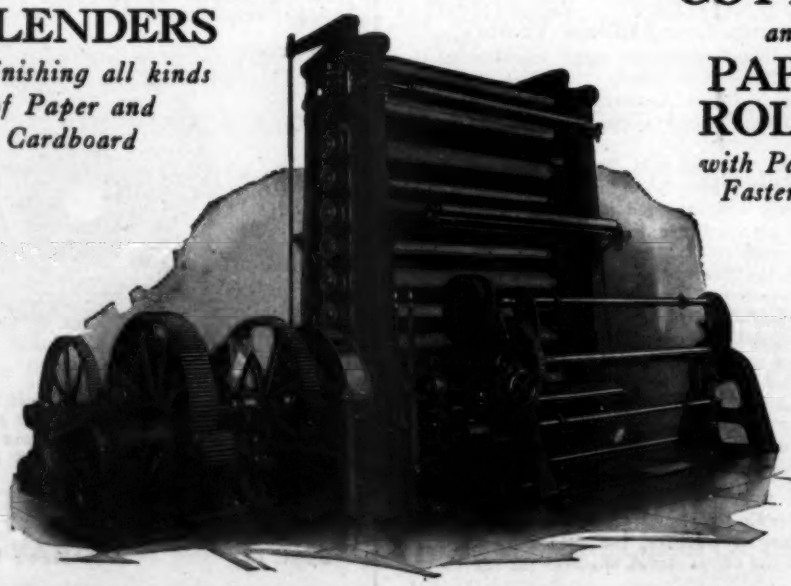
The Biggs Boiler Works Co. Akron Ohio Est 1854

GLOBE and CYLINDER
ROTARY BLEACHING BOILERS
for Years of Dependable Cooking and Bleaching

Holyoke Machine Co., Holyoke, Mass.
Makers of Improved Machinery for Wood Pulp and Paper Mills

LARGEST MAKERS *of*
CALENDERS
for finishing all kinds of Paper and Cardboard

COTTON *and* **PAPER ROLLS** *with Patented Fastenings*



Platers,
Washing and Beating Engines,
Wood Pulp Grinders,
Barkers,
Chippers,
Rag and Paper Dusters

Rag Cutters,
Hydraulic Pumps and Presses,
Hercules Water Wheels and Governors